THE Journal

OF THE AMERICAN DENTAL ASSOCIATION

JUNE

1955

CONTENTS

Temperature rise in teeth by instruments—Peyton....629
New local anesthetic agent—Monheim....633
Dental skills in oral and facial prosthesis—Fonder....636
Dentistry in the Confederacy—Hodgkin....647
Refutation of claims by fluoridation opponents—Black....655
Physiology of human dental occlusion—Jankelson....664
Newburgh-Kingston caries-fluorine study. VIII—Ast....680
Reports of councils and bureaus....686
Cases and comments....705
The reader comments....708
Editorials....710
International correspondence....716
News of dentistry....718
Book reviews....737
Current literature....743
Deaths....746
Directory....749
Announcements....751

NINETY-SIXTH ANNUAL SESSION SAN FRANCISCO • OCT. 17-20

only 13!
Only Thirteen! So Myerson's "Y" Moulds Were The Natural Solution
The young patient in the above photograph used to avoid opening her mouth in public. Rampant caries and abscesses had made necessary the removal of most of her anteriors and many of her posteriors. Thanks to the "Y" moulds in Myerson's Dura-Blend plastic tooth line, she is entering her teen age years as she appears here — with a happy smile! The mould used was YM-3, color H.
Complete details of this case will be gladly furnished on request.
MYERSON TOOTH CORPORATION • Cambridge 39, Mass.

For the patient young in years or simply young in heart, as well as for the mature patient who wants a realistic restoration, Myerson's Dura-Blend Plastic Teeth offer the natural solution. Write today for up-to-date mould chart. Address Dept. ADA-65.

The Journal of the American Dental Association is published monthly by the American Dental Association at 222 E. Superior St., Chicago 11, Ill. Printed in U.S.A. Second class mail privileges authorized at Chicago, Ill. Subscription $7.00 a year in U.S.A.; $8.00 foreign. Issue of June 1955, Vol. 50, No. 6. Copyright 1955 by the American Dental Association.

SINCE 1929 this high quality gold-color gold has enabled thousands of dentists to keep their partial dentures on the gold standard. Due to its efficient working qualities and modest price, it has met — and still meets — the competition of even base metals.

GOLD COLOR
per dwt.
$1.85

Your fine partials <u>deserve</u> gold.
Your patients always <u>prefer</u> it.

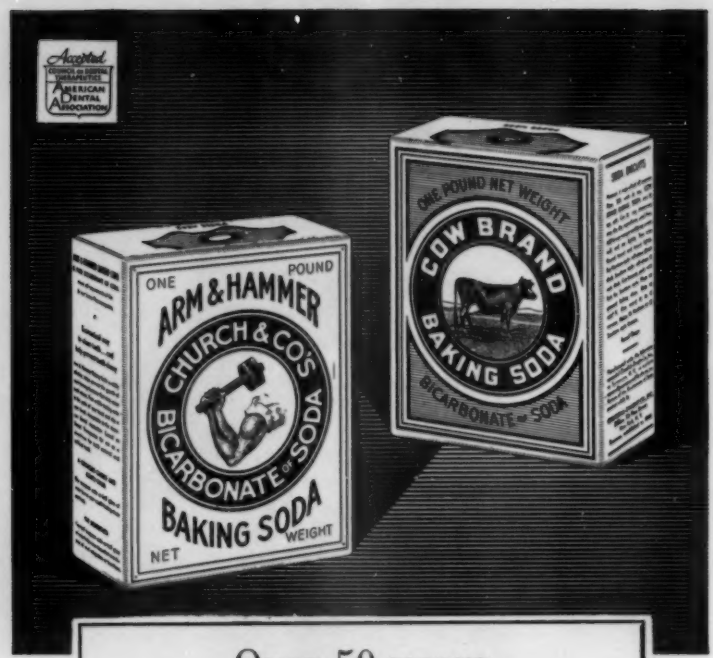
J. F. Jelenko & Co., Inc.

136 West 52nd Street • New York 19, U. S. A.

Cast by THERMOTROL

Quick as a wink...
50 Carpule® BRAND CARTRIDGES 2.2 cc.
STERILE SOLUTION
RAVOCAINE®
and NOVOCAIN®
with LEVOPHED®
COOK-WAITE
Laboratories, Inc.

and as gentle, too!
RAVOCAINE* HCl
Brand of propoxycaine HCl
AND NOVOCAIN*
Brand of procaine HCl
with LEVOPHED* or COBEFRIN*
SO FAST · SO DEEP · SO SURE
Levophed brand of levarterenol; Cobefrin brand of norepinephrine
Incidentally ...



Over 50 years
still one of the finest
toothpowders

Accepted by the Council on Dental Therapeutics
of the American Dental Association
as Sodium Bicarbonate U. S. P.

FREE Children's Booklets—We would like to send you children's booklets for your waiting room. They are approved by leading educators. Just write to us at the address below.

Church & Dwight Co., Inc.

70 Pine Street • **New York 5, N. Y.**

BUSINESS ESTABLISHED IN 1846

...filling material of improved endurance

lifelike appearance...simple technic!

DIAFIL

Here's every quality you want in a durable, dependable material for anterior and posterior fillings and for the restoration of broken down molars and bicuspids.

PFINGST & COMPANY, INC. • 62 COOPER SQUARE • NEW YORK 3, N. Y.

BUSCH BURS • HORICO DIAMOND ABRASIVES • AJUSTO HAND PIECES • STAINLESS INSTRUMENTS

Johnnie will certainly lose his self-confidence — and much more — if his balancing act gets out of balance.

And, novice denture patients can lose their self-confidence too, if you don't take practical steps to protect them against the "accidents" that so often occur during the adaptation period with any new denture.

Wernet's Powder can give them just that extra degree of retention and stability that may change annoyingly "difficult" patients to really "successful" ones—particularly in the presence of anatomical or psychological difficulties. They'll gain not only self-confidence, but comfort, too—for the soft, resilient cushion provided by Wernet's Powder eases the unaccustomed pressure on tender tissues.

WERNET DENTAL MFG. CO., INC., JERSEY CITY 2, N.J.

Wernet's Powder

Speeds the Mastery of the Denture

WERNET DENTAL LORE

JUNE, 1955

Porcelain teeth, made of a "mineral composition", celebrate their hundred-and-fiftieth anniversary next year; for it was in 1806 that Guiseppangelo Fonzi of Paris achieved the first successful formula for their manufacture. He used "platina hooks or pins" for attachments, and employed metallic oxides to produce 26 shades of color.

• • •

The first American dental patent was issued on June 28, 1797 to Thomas Bruff, Sr., of Maryland, for a new "perpendicular extractor", which he asserted "brings out the tooth in a perpendicular direction." For some unexplained reason, however, he promptly sold the exclusive rights for the use of the instrument in Baltimore and its suburbs to another dentist, Isaac Bassett; and thereafter continued to practice without access to his own invention.

• • •

A common method of tooth-extraction up until the 17th century required the patient to sit on the floor, his head between the knees of the operator, who inserted forceps and with repeated there-and-back movements, finally rocked the tooth loose from its position. A more imaginative procedure, however,—allegedly "painless"—was reported in certain Anglo-Saxon manuscripts dating from the 13th century, carrying the curious title "Leechdoms, Wortcunning and Starcraft". It directs: "Take some newts . . . and those nasty beetles which are found in ferns in the summer time. Calcine them in an iron pot, and make a powder thereof. Wet the forefinger of the right hand, and insert it in the powder, and apply it to the tooth frequently, refraining from spitting it off, when the tooth will fall away without pain. It is proven."

• • •

Claudius Galen (129-201 A.D.), second only to Hippocrates among great physicians of ancient times, is the first author to have recognized in his writings the presence of nerves in the teeth, and to have clearly differentiated between pulpitis and pericementitis.

• • •

The land of India—often thought of as a country merely of exotic caste systems and customs—actually has a high level of industrial development, and participates to a significant degree in international commerce—particularly with the United States. Among its exports are spices, tea, minerals, raw cotton—and Gum karaya, which in purified form constitutes the base of Wernet's Powder.

FREE PROFESSIONAL SAMPLES

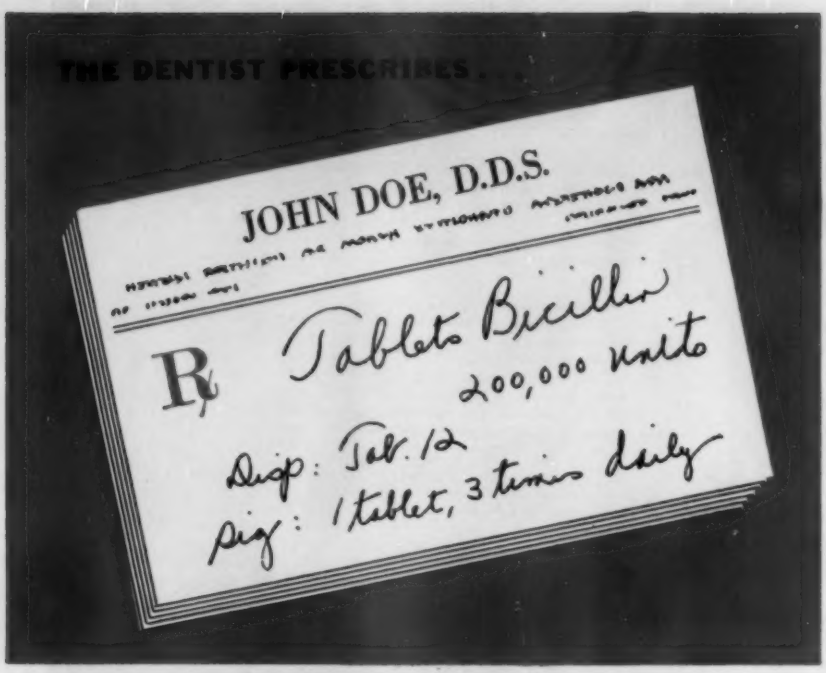
WERNET DENTAL MFG. CO., INC., Jersey City 2, N. J.

Please send me professional samples of Wernet's Powder. Dept. 15-F

Dr. _____
(Please Print)

Address _____

City _____ Zone ____ State _____



He prescribes Oral BICILLIN because: "Oral administration of 200,000 to 300,000 units of benzathine penicillin G [BICILLIN] every 6 to 8 hours will produce adequate blood levels for the treatment of most penicillin-sensitive infections. . . ."[1] In both prophylaxis and adjunctive treatment, Oral BICILLIN offers prolonged antibacterial blood levels, resistance to gastric destruction, maximal safety, convenient dosage regimen.

1. Council on Dental Therapeutics: J.A.D.A. 49:715 (Dec.) 1954

PRESCRIPTION PADS ON REQUEST

Accepted COUNCIL on DENTAL THERAPEUTICS AMERICAN DENTAL ASSOCIATION

Supplied: Tablets, 200,000 units, vials of 36; 100,000 units, bottles of 100. Oral Suspension, 300,000 units per 5-cc. teaspoonful, bottles of 2 fl. oz.; 150,000 units per 5-cc. teaspoonful, bottles of 2 fl. oz.

TABLETS SUSPENSION

Oral BICILLIN®

Benzathine Penicillin G (Dibenzylethylenediamine Dipenicillin G)

Wyeth® Philadelphia 2, Pa.

Penicillin with a Surety Factor

BAKER & CO., INC.

FOREIGN BRANCHES
LONDON
COPENHAGEN
ZURICH
TORONTO
RIO DE JANEIRO
JOHANNESBURG

GOLD

REFINERS & WORKERS OF
PLATINUM
113 ASTOR STREET
NEWARK 5, N.J.
CABLE ADDRESS "BAKER" NEWARK

SILVER

30 CHURCH STREET
NEW YORK 7
760 MARKET ST
SAN FRANCISCO 2
35 EAST WASHINGTON ST.
CHICAGO 2

April 25, 1955

REPLY: DENTAL DIVISION
890 PASSAIC AVENUE
EAST NEWARK, NEW JERSEY
PHONE: HARRISON 6-8870

Dear Doctor:

The Dental Profession recognizes Aristaloy as the World's Finest Filling Material only because of Twenty-Five years of scientific and practical proof in almost all types of fillings.

All alloys, the old coarse-grained type and those that are now ground into dust, have much more crushing strength than required. Because of this, the A.D.A. Specification calls for not more than 4% plastic flow under pressure to judge strength.

Aristaloy develops a crushing strength of 51,000 pounds per square inch and has an exceptionally low plastic flow of 1.4% to 1.8%.

Aristaloy users know that it has perfect working qualities and early initial set to allow proper carving and immediate removal of matrices without breakage.

Aristaloy is a blend of selected sizes of deliberately shaped solid particles free from dust. It packs into a very dense filling which permanently seals the cavity.

Our homogenizing process makes Aristaloy amalgamate as well after twenty years of shelf life as when new.

THERE IS STILL ONLY ONE ARISTALOY. It is practically zinc free, containing a beneficial 0.4%. It remains bright and clean in the mouth.

Insist on obtaining an Aristaloy dispenser combination from your dealer on your initial order.

Sincerely yours,

BAKER & CO., INC.

ENGELHARD

Saunders Dental Books

New (4th) Edition! Thoma & Robinson's

ORAL AND DENTAL DIAGNOSIS

Here is the master-key to oral diagnosis. *The New (4th) Edition* is completely up-to-date and vividly reflects today's concepts in techniques of examination, diagnosis and treatment-planning. A virtual atlas of nearly 1000 illustrations (55 in color), it shows every conceivable dental lesion. The combination of Dr. Kurt Thoma and Dr. Hamilton Robinson brings great authority to this important book. Every practicing dentist will welcome this font of information on diagnostic procedures most useful in daily practice.

By Kurt H. Thoma, D.M.D., F.D.S.R.C.S., Eng., Hon. F.D.S.R.C.S. Edin., Professor of Oral Surgery, Emeritus, and Brackett Professor of Oral Pathology, Emeritus, Harvard University; Lecturer on Oral Surgery, The Graduate School of Medicine, University of Pennsylvania; and Hamilton B. G. Robinson, D.D.S., M.S., associate Dean and Professor of Dentistry (Oral Pathology and Diagnosis), College of Dentistry, Ohio State University; Professor of Oral Pathology, College of Medicine, Ohio State University. About 584 pages, 6"x9", with 928 illustrations (55 in color). About $11.50. *New (4th) Edition*—Just Ready!

New (2nd) Edition! Trapozzano's

REVIEW OF DENTISTRY

A concise, authoritative and up-to-date review of every phase of dentistry. Anatomy, physiology, surgery, diagnosis, treatment, prosthetics, etc. are all here. This new edition gives you *in handy question and answer form* exactly what you need to know when preparing for State Boards, National Boards, or *any* dental examination. 24 leading dental authorities give full consideration to latest technics, new drugs, new dental materials and current concepts of treatment and management.

Edited by Vincent R. Trapozzano, F.A.D.P., formerly Professor of Prosthetic Dentistry, Head of the Prosthetic Department, and Director of Post-graduate Division, the Thomas W. Evans Museum and Dental Institute, School of Dentistry; and Professor of Prosthetic Dentistry, Graduate School of Medicine, University of Pennsylvania. With the collaboration of 24 American Authorities. 665 pages, 6" x 9". $8.00.
New (2nd) Edition—Just Published!

Order now for 30 day free examination!

W. B. SAUNDERS COMPANY, West Washington Sq., Phila. 5

Send for 30-day examination and charge: ☐ Easy Payment Plan ($3.00 month)

☐ Thoma & Robinson's Oral Diagnosis.....About $11.50

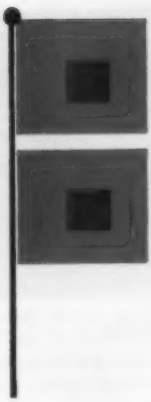
☐ Trapozzano's Review of Dentistry..... 8.00

Name_____

Address_____ ADA 6-55

– the silicate that safely
ignores storm warnings!

SYNTREX



We're not suggesting that a dentist would start a silicate filling while a hurricane is veering toward his office door.

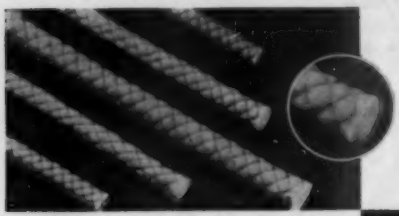
But with Syntrex, you *could* place the filling—because there never was a silicate less sensitive to atmospheric conditions!

In addition Syntrex mixes easily . . . sets promptly . . . develops strength rapidly . . . has low solubility . . . and provides a range of shades that vastly simplifies color-matching.

In any weather, in any month, you can depend on Syntrex . . . *"the best-behaved silicate in dentistry."*

For modern materials call on **Caulk** *Milford, Delaware*

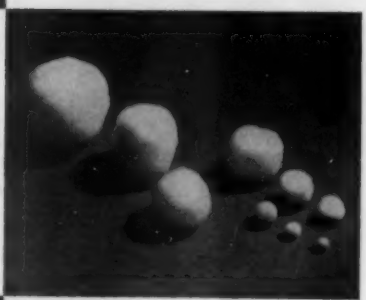
RICHMOND DENTAL COTTON ROLLS



More absorbent, convenient, comfortable. Bend easily, fit snugly. All cotton, no starch, non-irritating. Economical.

COTTON PELLETS & BALLS

NINE sizes to meet every need. Firmly spun from selected long-staple cotton, uniform in size and cotton content, free of nibs and wispy ends. Richmond makes them soft and well-formed—and of course they are highly absorbent.

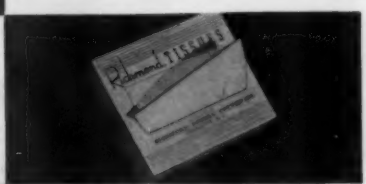


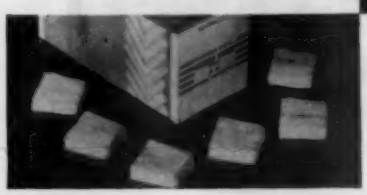
PELLET DISPENSERS

Temple, Revolving, Beehive. Sturdy, attractive, long-lasting; refills available in easy-to-use cartridge boxes or standard cartons.

TISSUES

Soft, absorbent, sturdy. Patients like the dispenser box, a convenient size for instrument tray; 2-ply, 5" x 8¼".





EXODONTIA SPONGES

Sterile or *non-sterile* packing. All gauze or cotton filled. Convenient, economical, absorbent. All cut edges lie in center.

Write for testing samples.

"Manufactured Where Grown"

RICHMOND DENTAL COTTON COMPANY

BOX 2176 • CHARLOTTE 1, NORTH CAROLINA

Dental Students

Finish your schooling as an Army Officer —with pay and allowances of over $4,000

IF YOU ARE a junior dental student in a dental school recognized by the Department of the Army, you may now complete your senior year with the full pay and allowances of an Army officer. Learn while you earn an officer's income of over $4,000 a year!

The Army Senior Dental Program offers unique opportunities both to expand your professional horizons and to perform valuable patriotic service to your country. It enables you to finish your education with a new sense of security—unhampered by financial worry. In return, you apply your professional skill for two years as a commissioned Dental Officer in the United States Army. During this period you will continue to learn, gaining broad practical experience with a wide variety of patients.

As an Army dentist you will find an achievement potential that matches anything in the field of dentistry. You'll enjoy a pleasant professional environment, uniform hours, opportunity for advanced study, increasing pay and the finest equipment and facilities. In addition, your assignments may take you throughout the world, giving you new chances for self-development. And you receive 30 days of paid vacation every year.

Let the Army Senior Student Dental Program help *you* to a better career. Take your senior year as an Army officer . . . serving, earning and learning for your country and yourself.

AND AFTER DENTAL SCHOOL —INTERN AT ARMY EXPENSE!

EACH YEAR a limited number of Army internships are awarded to qualified dental graduates. These internships—approved by the American Dental Association—offer you a rotating type of training in the major clinical dental fields while you serve as an Army officer. They provide for a 12-month period of advanced study at modern, well-equipped Army hospitals under the supervision of leading military and civilian dental specialists. This program is offered separately from the Army student program described above. However, under certain conditions the two may be profitably combined.

• For complete information on your opportunities as an Army dentist—both before and after graduation —mail coupon below!

U. S. ARMY
Dental Corps

MAIL THIS COUPON TODAY AD55-2

SURGEON GENERAL
U. S. Army, Washington 25, D. C.

Please send me the full details on—

(*Check one or both*) ☐ Army Senior Student Dental Program
☐ Army Dental Internship Program

NAME .....
ADDRESS .....
CITY ..... STATE .....
SCHOOL ..... DATE OF GRAD .....

Your Skill +

FOR SUCCESS IN

Mandibular

ANESTHESIA

Unacaine HCl and Supranol are the registered trade marks of the Novocol Chem. Mfg. Co., Inc., indicating its respective brands of metabutethamine HCl and natural epinephrine.

unacaine HCl

3.8 % WITH SUPRANOL 1:60,000

Fast-Acting Safe Local Anesthetic

If you have ever experienced difficulty in obtaining complete mandibular anesthesia (and our Department of Clinical Research records indicate that this happens more frequently than many dentists realize), the greater diffusibility, rapid action and added potency of UNACAINE HCl 3.8% will amaze you.

Reference in the dental literature is made again and again to the difference UNACAINE HCl makes in inducing complete mandibular anesthesia where other local anesthetics have failed. We quote from such a recent article[1] " . . . Utilizing UNACAINE Hydrochloride in more than 1,000 cases involving crown and bridge prosthodontia the authors can definitely state that UNACAINE closely approaches the ideal anesthetic . . . It was further noted, that in administering a mandibular block injection, the initial introduction of the solution was immediately effective, and a 'repeat' injection was rarely indicated."

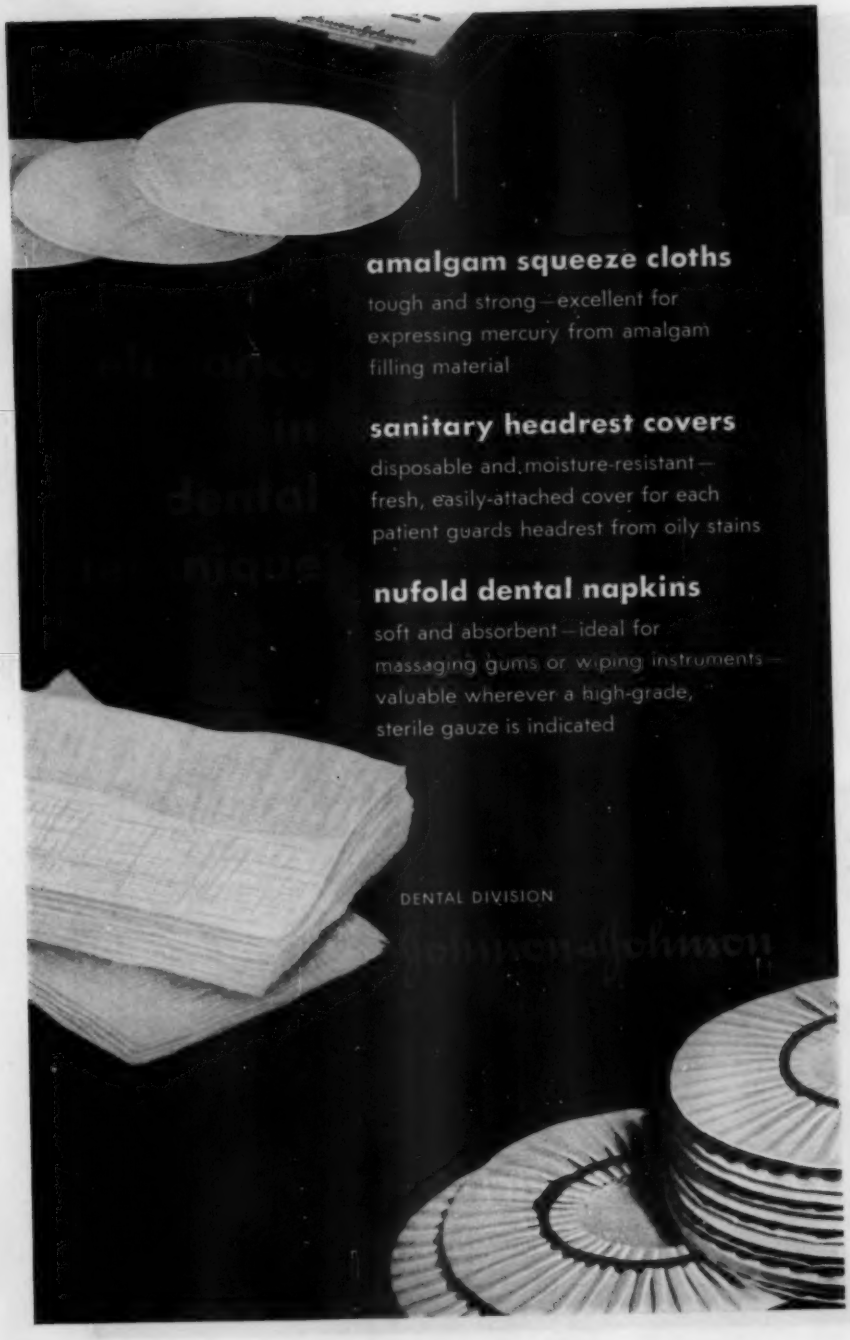
For success in mandibular anesthesia, your skill plus UNACAINE HCl are a "sure" combination!

UNACAINE HCl 3.8% offers all these desirable characteristics you seek in a local anesthetic—

- **Almost instantaneous anesthesia.**
- **2½ to 5 times safer than procaine.***
- **Remarkably intense anesthesia.**
- **Designed to cover average duration required for operative intervention.**
- **Rapid, uneventful return to normal.**

*5 times safer. Clinical concentrations. 2½ times safer by intravenous injections since a Unacaine toxicity comparable to that of procaine.

Novocol CHEMICAL MFG. CO., Inc.
2911-23 Atlantic Avenue, Brooklyn 7, N. Y.
Toronto—London—Buenos Aires—Rio de Janeiro


amalgam squeeze cloths
tough and strong—excellent for expressing mercury from amalgam filling material
sanitary headrest covers
disposable and moisture-resistant—fresh, easily-attached cover for each patient guards headrest from oily stains
nufold dental napkins
soft and absorbent—ideal for massaging gums or wiping instruments—valuable wherever a high-grade, sterile gauze is indicated
DENTAL DIVISION

JUNE 1955

THE Journal OF THE AMERICAN DENTAL ASSOCIATION

VOLUME 50 • NUMBER 6

Temperature rise in teeth developed by rotating instruments

F. A. Peyton, D.Sc., Ann Arbor, Mich.

Recently various rotating instruments used to cut tooth tissue have been sufficiently refined and improved so that many dentists are now employing rotating speeds with these instruments which previously were considered impractical. For many years speeds of 4,000 to 6,000 rpm were considered standard; now speeds of 10,000 to 15,000 rpm are being used routinely, with some operators employing instrument speeds of 20,000 to 30,000 rpm.

Associated with increased operating speeds has been the accepted use of coolants applied to the tooth during the cutting operation. The desirability of coolants of various types[1,2] applied in different manners[3,4] has been suggested for several years. Some studies have been reported of the temperature rise to be expected in the cutting instrument[5] and tooth[6-9] when different rotating instruments are employed. In general, these studies have been confined to relatively slow speeds of rotation.

PURPOSE AND METHOD OF STUDY

The purpose of the investigation reported herein was to determine the temperature rise in the tooth when steel burs, carbide burs, and diamond instruments of similar dimensions were rotated at speeds over

Professor of dentistry, University of Michigan School of Dentistry.

1. Sherman, J. A. The vapor spray method for control of pain. J. Canad. D. A. 13:11 Jan. 1947.

2. Lieber, Leon. Thermal control apparatus for dental drilling. J.A.D.A. 33:1117 Sept. 1, 1946.

3. Killilea, J. F. Air-conditioned handpiece. J.A.D.A. 32:966, Aug. 1, 1945.

4. Thomas, B. O. A. Effectiveness of chilled burs in eliminating pain. J. D. Res. 30:361 Aug. 1941.

5. Hudson, D. C., and Sweeney, W. T. Temperatures developed in rotating dental cutting instruments. J.A.D.A. 48:127 Feb. 1954.

6. Peyton, F. A., and Vaughn, R. C. Thermal changes developed during the cutting of tooth tissue. Fort. Rev. Chicago D. Soc. 20:9 Dec. 15, 1950.

7. Peyton, F. A., and Henry, E. E. Problems of cavity preparation with modern instruments. New York D. J. 22:147 April 1952.

8. Henschel, C. J. Heat impact of revolving instruments on vital dentin tubules. J. D. Res. 22:323 Aug. 1943.

9. Walsh, J. P., and Symmons, H. F. Comparison of the heat production and mechanical efficiency of diamond instruments, stones, and burs at 3,000 and 60,000 rpm. New Zealand D. J. 45:28 Jan. 1949.

10,000 rpm to cut tooth tissue, with the application of a water spray, air, or no coolant to the tooth during the cutting operation. Freshly extracted teeth were used and rotating speeds of between approximately 10,000 and 30,000 rpm were employed. The tests were conducted in a manner similar to those described in a previous report.[6] Essentially, a thermocouple was inserted to the dentinoenamel junction in the tooth, and tissue was then cut away until the thermocouple was exposed. Intermittent cutting action was employed with a two second cut followed by a one second rest. The temperature was recorded at the instant of thermocouple exposure, and was considered to approximate closely the temperature developed in the tooth adjacent to the area.

Three types of cutting instruments were employed in this study—steel and carbide burs of the inverted cone type, no. 37, and inverted cone diamond points, no. 39. The product of one manufacturer was selected for each type of instrument. The temperature developed by these cutting instruments was determined when both a one-half pound and a one pound force was applied to the handpiece. Coolants were applied in the form of either an air stream, or an atomized air-water spray mixture, directed on the cutting instrument.

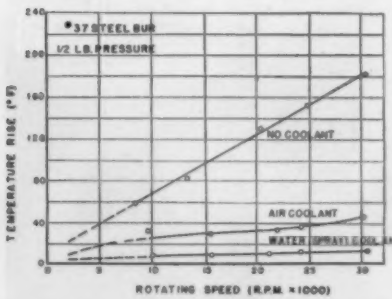


Fig. 1 • Temperature rise when no coolant, air or air-water spray mixture was applied to tooth during cutting operation

OBSERVATIONS

Figure 1 shows the temperature rise at speeds up to 30,000 rpm when no. 37 steel burs were used at one-half pound pressure to cut tooth tissue, with water spray or air coolants applied, or with no coolant employed. Each recorded value on the graph represents an average of five or more individual measurements. The broken portion of the curves on the left represent values obtained in a previous study[7] when the same instrument was studied at slower speeds of rotation.

It is important to keep in mind that all of the results obtained from this study represent the temperature rise above the normal operating condition, such as room temperature or mouth temperature. The results in Figure 1 show that when no coolant is applied there is a uniform rise in the temperature developed in the tooth with an increase in operating speed. Inasmuch as the temperature developed in the tooth is accepted as being the chief source of discomfort and tooth damage with rotating instruments, it can be seen that only at very low speeds of operation is the temperature sufficiently low to avoid damage when no coolant is employed. Of the two coolants studied, the water spray was most effective, giving a temperature rise of only approximately 15°F. when the steel bur was used at a half pound pressure and 30,000 rpm.

The values shown in Figure 2 represent the results obtained with steel burs when employed under the same conditions as described for Figure 1, except that a pressure of one pound was applied. From these values it can be seen that the water spray coolant is effective in keeping the temperature rise in the tooth to less than 20°F., even when heavy pressure and high speeds are employed. Air directed into the cavity during the cutting operation has some beneficial cooling effect as shown by results in both Figures 1 and 2. The shape of the curve (labeled no coolant) is of no importance in Figure 2.

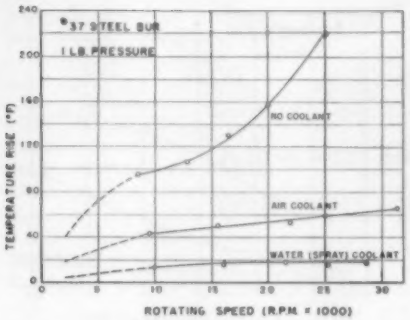


Fig. 2 • Temperature rise in tooth when bur was operated under conditions similar to those in Figure 1, except greater pressure was applied

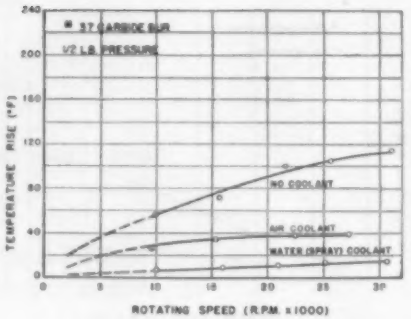


Fig. 3 • Effect of coolants on temperature rise in tooth when carbide bur was employed with light pressure at various speeds

Less uniform results were obtained from individual measurements when the heavy pressure was applied with no coolant. Therefore, the average values are probably less accurate than those obtained when coolants or less pressure were applied. The dulling action on the burs was pronounced when the one pound pressure was employed at high speeds of rotation with no coolant. In general, the temperature rise shown in Figure 2 was consistently higher for all conditions than the rise shown in Figure 1 when a half pound pressure was applied. At speeds of more than 10,000 rpm, a force of only a half pound or less should be applied to the handpiece for most favorable operating conditions.

Figure 3 shows the average temperature rise obtained at different speeds of rotation when a no. 37 carbide bur was used with a half pound pressure applied to the handpiece. When no coolant was employed, the temperature rise was slightly less with carbide burs than with steel burs, as is indicated by a comparison with values shown in Figure 1. When either air or water spray coolants were employed, the temperature rise was almost the same for carbide as for steel burs.

Values in Figure 4 represent the temperature rise that can be expected from a no. 37 carbide bur when one pound is applied to the handpiece. The greater force during cutting caused some increase in temperature rise when no coolant was used, but with water spray and air coolants, the temperature rise was not greatly different from that observed with the carbide bur when operated at either the half or one pound pressure.

The temperature rise obtained when a no. 39 diamond was employed with a half

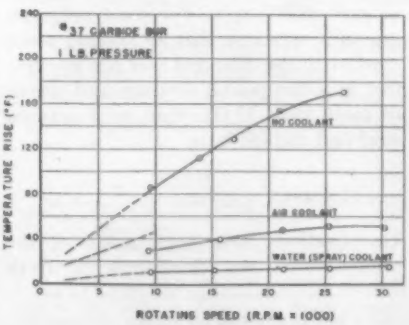


Fig. 4 • Temperature rise in tooth produced by carbide bur operated at different speeds with one pound pressure and different coolants

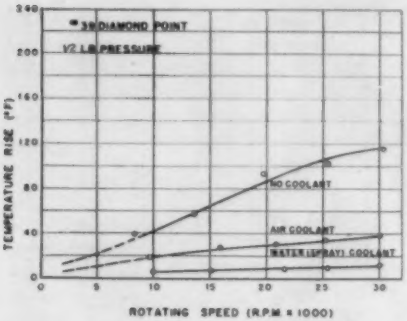


Fig. 5 • Temperature rise developed by diamond point operated at various speeds with a half pound pressure and various coolants

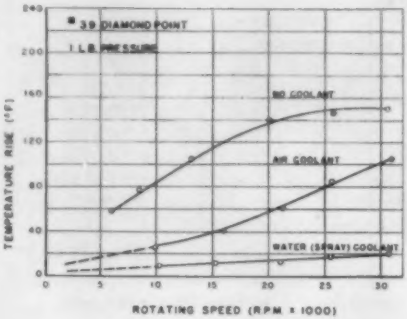


Fig. 6 • Influence of one pound pressure on diamond point operated at various speeds with no coolant, air or air-water spray applied

pound pressure is shown in Figure 5. These values were uniformly lower than those obtained with either carbide or steel burs, regardless of whether tested with water spray or air coolants or without a coolant being applied. A temperature rise of only approximately 15° F. was observed at 30,000 rpm when this diamond instrument was operated with a water spray applied.

An increase in pressure to one pound on the no. 39 diamond caused some increase in the temperature rise observed (Fig. 6). When a water spray was applied, the temperature that developed in the tooth was not excessive even at speeds of over 30,000 rpm. For some unknown reason it appeared that air coolant alone applied to the diamond was not as effective at a one pound pressure and speeds of more than 15,000 rpm as it was on steel and carbide burs.

SUMMARY

Investigations have been made of the temperature that developed in teeth when cut with steel burs, carbide burs and diamond instruments operated at speeds up to approximately 30,000 rpm. Study was made of the effect of air and water spray as coolants in comparison with no coolant, and, in addition, the effect of a half pound and one pound force on the handpiece was observed.

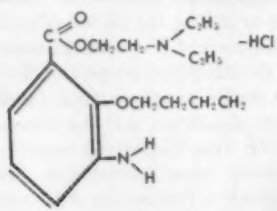
In general, the diamond instrument showed less temperature rise than was shown by the burs under all comparable conditions of study. The carbide bur generally caused a little less temperature rise in the tooth than the steel bur. Results indicate that a coolant is essential when operating rotating instruments at speeds of 10,000 rpm or above, and of the two coolants studied, the water spray is the most effective. When the water spray was employed, there appeared to be no damage to the tooth from overheating at any speed of rotation of the instruments studied. Further studies would be desirable to determine the temperature rise developed by other rotating instruments such as disks, wheels or other burs with the same and other coolants applied.

A new local anesthetic agent: preliminary report

Leonard M. Monheim, D.D.S., Pittsburgh

A new local anesthetic agent has been used for approximately a year in the clinic of the University of Pittsburgh School of Dentistry in order to determine its effectiveness for dental operative and surgical procedures when administered by block and infiltration technics.

Chemically known as 2′ diethylaminoethyl-2-butoxy-3-aminobenzoate hydrochloride, and issued under the brand name Primacaine HCl, the anesthetic is represented by this structural formula:



It was synthesized by Epstein and Myer.[1,2] Chemical and physical properties and pharmacological data were determined by the research department of Novocol Chemical Manufacturing Co., Inc.

The new drug differs from local anesthetics of the butethamine and procaine types in that the amino group on the benzene ring is in the meta instead of the para position and a butoxy group is added to the ring's 2 position.

Primacaine HCl occurs as a white crystal with a melting point of 115° to 118° C. It has a distilled water solubility of 75 per cent at room temperature and is stable to heat sterilization.

Pharmacologically, Primacaine HCl was found to have greater analgesic potency than procaine, butethamine and metabutethamine, while subcutaneous and intraperitoneal toxicity studies place it in the procaine range.

Because of its high analgesic potency, it may be used in a 1.5 per cent dilution while other anesthetic drugs are commonly furnished in 2 per cent and 4 per cent concentrations. The fact that clinical testing with epinephrine dilutions of 1:200,000 and 1:400,000 indicated that these dilutions were sufficient to maintain anesthesia levels for periods of one to two hours suggests that the new anesthetic does not have vasodilator tendencies.

To determine whether excessive doses would produce systemic damage or local tissue irritation, two groups of rats received daily injections of ten and 25

The material used in this study was furnished through the courtesy of the Novocol Chemical Manufacturing Co., Inc., New York.

From the department of anesthesia, University of Pittsburgh School of Dentistry.

1. Epstein, E.; Myer, M., and Ginsberg, H. Experiments of toxicity and local anesthetic activity of alkyl amino ethyl esters of meta amino alkoxy benzoates. Accepted for publication by Anesthesia and Analgesia Research Journal.

2. Epstein, E., and Myer, M. Mono and di alkyl amino ethyl esters of meta amino alkoxy benzoic acids. Unpublished.

times the calculated human dose, and these animals were sacrificed at the end of a two week period for histological examination of the spleen, liver, kidneys and the muscle tissue at the injection sites. No variation was observed within the organs, blood counts were in the normal range, and the sites of the repeated daily injections showed no evidence of irritation.

The clinical studies at the University of Pittsburgh Dental School covered 470 injections on dental patients by the infiltration, mandibular, infraorbital and tuberosity methods. The cases in which it was used for surgical and for operative procedures were about equally divided. The Primacaine HCl 1.5 per cent solution was used with epinephrine dilutions which varied from 1:50,000 to 1:400,000; also included in the study were 20 injections of the 1.5 per cent solution without vasoconstrictor. The absence of a controlled study precluded a statistical evaluation at this time, but plans have been made to present a statistical comparison in a subsequent paper.

DISCUSSION

All but one injection produced profound anesthesia, and the single instance which was classified as "fair anesthesia" followed the administration of the epinephrine-free solution. The group consisted of routine dental patients, taken as they presented themselves. None were selectively excluded, but a number of individuals who had proved refractory to other anesthetic agents were included. Not a single anesthetic failure was encountered in the group of patients who had been refractory to other anesthetic drugs at previous appointments.

The onset of local anesthesia was extremely rapid. In many instances it was estimated that surgical anesthesia was present within 30 to 45 seconds, while some patients volunteered the information that they had experienced numbness before the needle had been withdrawn. In practically every instance anesthesia was complete within a two minute period.

Anesthesia duration was influenced by the vasoconstrictor concentration. In those instances in which the epinephrine-free solution was employed, duration approximated 30 minutes. The 1.5 per cent solution with epinephrine 1:50,000 gave a block anesthesia duration average somewhat in excess of three hours, while infiltration injections would last for 1½ to 2 hours. Epinephrine dilutions of 1:100,000, 1:125,000 and 1:150,000 produced anesthesia averages of about two hours. The epinephrine contents of 1:200,000 to 1:400,000 yielded proportionally briefer durations, but freer bleeding in the instances in which surgery was performed was observed when the 1:400,000 solution was used. Because of the prolonged anesthesia and relatively minor incidence of toxicity, the optimum epinephrine dilutions appear to be 1:50,000 and 1:125,000.

Complications that arose during injection or during the period of anesthesia were minor and few and, in most cases, could be attributed to psychic factors or to the needle puncture itself. It was particularly significant that the burning sensation on injection, which sometimes occurs with other anesthetics, was not present when Primacaine HCl was used. This would appear to be attributable to the nonirritating qualities of this drug. There were no serious toxic reactions, and no allergic response was observed. In fact, several dentists who had developed a dermatitis of the hands from other anesthetics used Primacaine HCl as a substitute and reported no recurrence of the dermatitis after several months had passed.

Postinjection examination in the present study disclosed no swelling or slough at the puncture site, and the few instances of slight postinjection pain were attributed to needle trauma.

Table • Summary of data from 15 dental schools regarding injections of Primacaine HCl

Primacaine solution	No. of patients	No. of injections	Type of operation: Surgical	Type of operation: Operative	Type of injection: Infiltration	Type of injection: Mandibular	Type of injection: Tuberosity	Type of injection: Infra-orbital	Anesthesia: Profound	Anesthesia: Fair	Anesthesia: Poor	Toxicity: Pallor	Toxicity: Trepidation	Toxicity: Perspiration	Toxicity: Fainting	Hemorrhage: Excessive	Hemorrhage: Subnormal	Post-injection: Pain	Post-injection: Dry socket
1.5% with no epinephrine	46	53	48	5	22	18	11	2	52	1								53	
1.5% with phenylephrine 1:25,000	67	76	58	18	41	26	8	1	69	4	3					3		3	
1% with epinephrine 1:50,000	151	166	135	31	8	78	8		152	11	3	5				3	3		2
1.25% with epinephrine 1:50,000	34	35	18	17	11	16	8		27	5	3	1	1						
1.5% with epinephrine 1:50,000	1,100	1,208	782	426	581	516	82	29	1,107	70	30	11	4	13	3	12	11	11	3
1.25% with epinephrine 1:80,000	181	220	149	71	120	73	12	15	212	6	2								
1% with epinephrine 1:100,000	142	164	43	121	81	64	18	1	143	15	6	1						3	
1.25% with epinephrine 1:100,000	335	372	199	173	186	131	53	2	338	25	9	10		4	3	2	10	4	2
1.5% with epinephrine 1:100,000	362	426	329	97	241	149	23	13	416	6	4	5	3	7		7	5		
1.5% with epinephrine 1:150,000	110	111	66	45	51	52	8		102	7	2	2	1			1	7		
1.5% with epinephrine 1:200,000	159	169	111	58	51	84	26	8	165	3	1	2	1	1		7		1	1
1.5% with epinephrine 1:400,000	13	16	16		9	7			12		4								
Total	2,700	3,016	1,954	1,062	1,474	1,214	257	71	2,804	153	67	37	10	25	6	35	36	75	8

In order that our findings may be compared with those of other groups that have investigated Primacaine HCl, a table is included summarizing data regarding some 3,000 injections made by staff members of 15 dental schools in the United States and Canada. It will be seen that the observations made elsewhere correspond closely to ours with respect to the degree of anesthesia, absence of toxicity and to the postinjection picture.

SUMMARY AND CONCLUSIONS

Primacaine HCl is a potent local anesthetic with a low order of toxicity.

It appears to diffuse more rapidly than other commercially available local anesthetic solutions.

No allergic manifestations were noted after administration of Primacaine HCl, although a number of patients who received injections had had a history of allergic response to other preparations.

The potency of the new local anesthetic makes it possible to use lower concentrations of the anesthetic drug than are commonly employed and permits smaller epinephrine dilutions without sacrificing anesthetic depth.

Results with this new anesthetic agent have been sufficiently satisfying to warrant further investigation; work is now in progress to determine further its advantages by comparative studies.

Dental materials and skills in oral and facial prosthesis

A. C. Fonder, D.D.S., Winnetka, Ill.

Rehabilitation of people with cleft palates, missing ears, noses, parts of the face and so forth by means of technics familiar to the dentist and dental materials found in every office can be so simple that no dentist can conscientiously ignore his responsibility for this service to the handicapped in his locality. These handicapped persons range from the recluses who have completely shut themselves off from society to those who have achieved some social adjustment. Both need physical rehabilitation.

There are at present one quarter million persons with congenital cleft palates, and in all, well over a million handicapped people for whom surgery is contraindicated or impossible. They must turn to the somatoprosthetist for help, and he in good conscience must do his part.

Special training and special talent is required to care for these handicapped people, but the average dentist has the talent and training to qualify him for this somatoprosthetic rehabilitation. The ideal solution of this problem is teamwork between surgeon, somatoprosthetist (dentist or physician), speech therapeutist and psychologist. Until there are suffi-

cient centers established in which cases can be dealt with in this way, however, the dentist is the logical individual to make life fuller for many of the physically handicapped.

This paper presents a number of cases in which the procedures of facial and oral restoration employed are sketched in sufficient detail to show how much was accomplished by means of materials and skills used in the practice of dentistry. The effect of physical rehabilitation on the patient in relation to his social and business environment is also emphasized. Two general types of cases and restorations exemplify these methods and the rehabilitation accomplished. Three of the examples cited are palate clefts, and the restorations for these patients may be regarded as more or less permanent and eminently satisfactory. The remaining three instances are facial defects brought about by cancer. One of these shows the utilization of a facial mask as a temporary restoration during an extended period of observation of the results of surgery, when without the mask, the patient would have been prevented from carrying on social and business activities. The importance of the temporary restoration has not previously been sufficiently stressed.

CASE 1

A 21 year old man with a cleft of the hard and soft palate, which had been unsuccessfully operated on, was a rather unusual person, extremely intelligent and socially well-adjusted. A certified public accountant with special honors, he had had a happy childhood and adolescence, had been very active in all school functions, had "dated" and had not considered himself handicapped until he tried to get a job. Firms would not hire him; they gave lame excuses, and a few told him outright that they could not use a person with the defects he possessed. This difficulty of gaining employment determined him to do something about his appearance. He consulted a surgeon, who removed some scar tissue from the lip, which had been twice operated on while he was an infant, and succeeded in loosening the upper lip. The nose, which was previously flattened in appearance, was built out. An oral surgeon removed the abnormal and malpositioned anterior teeth, and the patient was referred to me for prosthesis.

Gross examination revealed a wide cleft of both the hard and soft palate. The speech was extremely poor and difficult to understand. The mucous membrane of the mouth was normal, the periodontal tissues appeared normal and the teeth were in good repair. Occlusal contact was present only on five cusps of the entire dentition; this contact existed only in the region of the second molars. A 4.5 mm. opening existed between the mandibular and maxillary first bicuspids when the teeth were closed. The lower lip was typically overdeveloped and the upper lip appeared sunken.

Roentgenograms of the head showed no appreciable disturbance of the temporomandibular joint, but a lack of development of the maxilla was noted, especially in the anterior segments of the arch. A slight condensing osteitis appeared in the region of the second molars.

The treatment consisted of a cosmetic veneer denture with a fixed obturator to correct both appearance and speech. A special tray was prepared for an impression of the maxilla and the cleft of the soft palate and the posterior pharyngeal walls. About three thicknesses of pink baseplate wax were luted to an ordinary perforated tray for the impression. A hot spatula was used to perforate the wax for retention purposes. After the wax was trimmed to fit properly into the soft palate cleft and pharyngeal region, an impression was taken with Dupli-Colloid.

While this impression was being taken, the air was completely cut off from the nose, and the patient had to breathe through the mouth. In order to prevent

the inhalation of saliva, the patient was instructed to lean forward after the impression tray was placed, and the saliva which flowed from the mouth was absorbed with towels.

After the models were secured, the patient was treated very much as in the construction of a complete upper denture. A cosmetic veneer denture was built over and around the remaining teeth. The metal skeleton framework was prepared for retention purposes by means of a cast Vitallium skeleton that was completely imbedded within the acrylic resin of the denture and obturator, except for the split clasps on the last two molars on each lateral segment and the rests on the first bicuspids. The teeth were then set up as in a complete denture. The posterior teeth were ground as one would grind acrylic teeth when doing a setup for a patient with an extremely close bite. These acrylic teeth were then fitted over the natural teeth, the upper lip being built out, as Beder[1] describes, to proper facial contours. The results in this case were gratifying, simple and inexpensive, and good cosmetic results were obtained (Fig. 1).

In this case the labial flange which had been built out approximately ½ inch was further extended a year later by an additional 2 mm. of acrylic resin to fill out the lip which had relaxed and loosened considerably. Quick-setting acrylic resin was used for this immediate repair correction.

Within a few weeks the patient had almost perfect speech without speech therapy. No speech guidance was given. Undoubtedly keen intelligence and adaptability to the appliance gave the almost perfect immediate results. Within six months the patient had received three raises in pay with attendant promotions. He now uses a telephone in his work, and after two years he is scheduled for an executive position in his company. This is something that could not have come to pass without the cosmetic and speech correction obtained through the prosthesis.

CASE 2

A 21 year old man with a typical operated cleft palate and lip (Fig. 2, left) sought treatment. A closure of the cleft of the soft palate had been performed a few weeks after birth, followed by a push-back operation to elongate the palate. The lip had been operated on in early infancy and again several years later when corrections were attempted.

The treatment of the lip had been successful. Closure of the soft palate, on casual examination, also seemed successful, but there is more to be considered than mere closure of a hole. The short taut mass of scar tissue, as demonstrated in the cases studied by Graber[2] and Brodie,[3] apparently had done much to distort and disturb the growth of the maxilla. The fairly normal appearing soft palate was useless as a speech organ and only succeeded in making it impossible to place an obturator properly to correct the speech. The palate would have been far better if it had been left untouched. To obtain the best results with an obturator, it would have been necessary to open up the soft palate and undo the surgery, but since the patient and his family were hesitant, an obturator was constructed which passed below the taut and useless soft palate (Fig. 2, right).

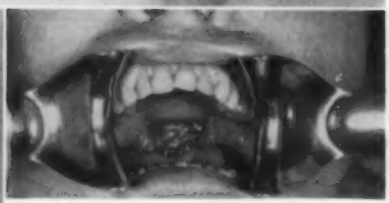
The young man was extremely sensitive about his lip and the abnormal and malpositioned anterior teeth. He seldom smiled or laughed and always covered his mouth with his hand when he did so. He

1. Beder, O. E. Postsurgical prosthesis. Oral Surg., Oral Med. & Oral Path. 1:291 March 1948.

2. Graber, T. M. Craniofacial morphology in cleft palate and cleft lip deformities. Surg., Gynec. & Obst. 88:359 March 1949.

3. Brodie, Allan G. On growth pattern of human head from third month to eighth year of life. Am. J. Anat. 68:209 March 1941.

Fig. 1 • Cleft of hard and soft palate. Profile before treatment



Profile after treatment. Note filled out upper lip. Fixed obturator and veneer denture in place

crossed streets to avoid meeting people, ducked between buildings or back into his car when he saw someone he knew. He had never had a girl friend. At the age of 21 he considered himself a misfit.

Previous orthodontic treatment had established fair occlusion, which was the best result obtainable in view of the deformities. The mucous membrane was normal, the periodontal tissue was normal, the soft palate was very taut, the mouth was small and the gold inlay work throughout the mouth was defective. The lower lip was normal. A roentgenographic headplate showed a normal temporomandibular joint and an underdeveloped maxilla.

An impression tray was constructed by mechanically attaching a soft metal flange to a hydrocolloid tray for a hydrocolloid impression of the soft palate and the posterior pharyngeal wall in conjunc-

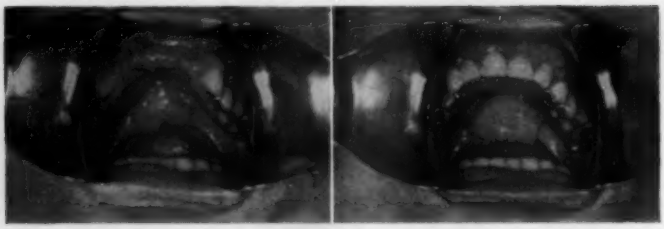


Fig. 2 • Left: Patient with operated cleft of soft palate and lip. Right: Obturator with fishtail and cosmetic veneer denture

tion with an impression of the maxillary dentition and the contiguous tissues. After the construction of a cosmetic veneer denture, a rigid obturator was added in the form of a fishtail passing under the taut soft palate and up high on the posterior pharyngeal wall. The malpositioned and malformed six anterior teeth were removed to allow placement of the immediate denture-obturator. Three months later the anterior segment of the denture was relined to compensate for the settling of the tissues.

The speech was improved, eliminating much of the nasal quality. The patient was referred to a speech teacher for training. Several attempts were made to improve the position of the obturator. After several months, more speech improvement was accomplished, but it was recognized that unless the soft palate were opened up, the obturator could never be properly placed for maximum speech correction.

A rapid social adjustment took place. Although previously the patient had no girl friends, after wearing the obturator-denture for four years, he was engaged to be married.

CASE 3

The patient was a 60 year old man with a defect of the hard palate from cancer (Fig. 3, below). Approximately one half of the maxillary ridge from the median line to the right heel of the alveolar process had been removed to arrest a cancerous growth. For two years after this surgery, the patient attended the hospital three times a week to have petroleum jelly gauze packs in this cavity, which extended into the maxillary sinus and the nasal cavity. His spoken words were not understandable, and food issued from the nose when the pack was not in place. He was referred to me for an obturator.

A hydrocolloid impression was taken, requiring no special tray. A hollow methyl methacrylate bulb, on the order of those described by Appleman[4] for use immediately after surgery, was made to fill this defect and was made part of the cosmetic denture that was subsequently fashioned. The lower ridge, which had been almost completely resorbed, leaving a nearly flat surface, was fitted with a lower denture. Extreme care had to be taken to get perfectly balanced occlusion because of the lack of a lower ridge and the absence of one half of the upper arch.

Considerable time was consumed in obtaining the desired occlusion. The speech defect was immediately and completely corrected once the opening was closed. It is needless to add that the mental adjustment of the patient was remarkable (Fig. 3, right).

The last three examples reported here are instances in which extensive loss of

4. Appleman, R. M. Surgical prosthesis. J. Pros. Den. 2:401 May 1952.

facial tissue has resulted from cancer.

The author has done considerable work with latex and other soft and flexible materials, but the best cosmetic results and the most lasting results have been produced with hard acrylic resins. Soft materials, being extremely porous, are in most cases affected by body secretions which produce color change (usually darkening), shrinkage, induration and brittleness; therefore, the appliance made of soft materials lasts only from several weeks to several months. Repair work, either to mend a fracture in the hard acrylic resin or to extend the appliance, can be accomplished easily with self-curing acrylic resins. Some of the face masks discussed have been worn for five years without added attention other than that supplied by the patient in personal hygiene.

CASE 4

A 60 year old man, because of an uncontrolled skin cancer, lost his nose and the greater part of his right cheek and lip (Fig. 4, left). Radical surgery, cautery and radium failed to control the cancer completely.

A mask was made in the following manner: A rather large paper carton was obtained, from which a section 16 inches square was removed. The patient was seated in the dental chair and tilted back to a horizontal position. An opening in the center of the cardboard section was gradually enlarged so as to fit and frame the face, exposing the forehead, chin and all features anterior to the ears. The facial muscles sagged slightly more than they would have if the patient had been in a sitting position, but since the latter position requires complicated, large impression trays and since the distortion from sagging of the tissues is easily compensated for in the finished acrylic mask, the simpler method was used. The patient was prepared for the impression by having his nostrils gently packed with moist cotton and straws placed in his mouth for breathing.

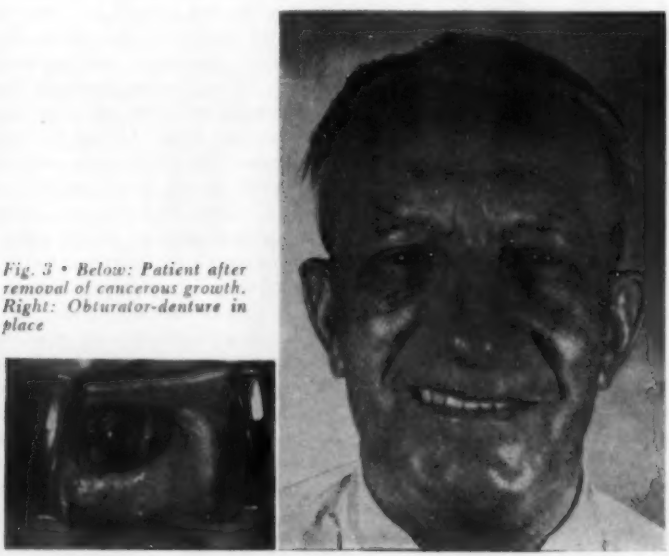


Fig. 3 • Below: Patient after removal of cancerous growth. Right: Obturator-denture in place

Fig. 4 • Left: Facial deformity after surgical treatment of cancer. Right: Patient four years after prosthesis was completed

Dupli-Colloid was mixed and allowed to flow over the entire face, care being taken not to trap air. Cotton fibers were sprinkled over the area to attach the impression material mechanically to the layer of dental plaster that was spread over the impression for support. When the material was sufficiently hard, the patient was instructed to flex the facial muscles to loosen it. The impression was gently removed, and immediately a model was poured in plaster. Red denture wax was used to mold a nose and fill in the missing tissue on the plaster model. While a flame was applied to keep the wax soft and workable, the nose was molded and carved in much the same manner as in the festooning of a denture and in duplication of the rugae.

After the mask was carved to proper shape, the mask and the plaster mold were covered with petroleum jelly, and a counterdie was poured in plaster to complete the top half of the mold. The mold was then separated, and approximately 2 mm. of wax were removed from the wax model to allow sufficient thickness for the face mask. Liquid foil was used to separate the acrylic resin and the plaster mold. A self-curing acrylic resin in verious shades of color was mixed. An attempt was made to get the color of the resin to match the lighter coloring of the natural skin. The mold was turned upside down, that is, nose down, and the acrylic resin was poured into the concave half. The mold was closed firmly but with not enough pressure to fracture the plaster, which, of course, was not reinforced with metal. The mold was allowed to remain closed for approximately five minutes to insure an initial set of the resin. The mold was separated about the time the resin completed the initial set, and the

wax was removed so that it would not melt during polymerization. The flask remained upside down so that the acrylic resin would not sag away from the mold. In order to preserve the peripheral fit of the mask to the original model, the mold was again closed.

At the next appointment with the patient, the acrylic mask was trimmed so that it would follow the natural curvatures of the face and the rims of the glasses in order to conceal the edges of the appliance. Care was taken to rest the appliance on good healthy tissue. The marginal adaptation of the mask had to be perfected because of the slight sagging of the facial tissues. Heat from a Bunsen burner softened the periphery of the mask, and gentle pressure was used to mold it to the desired contour. This procedure was repeated until proper adaptation was achieved.

Self-curing acrylic resin was used to join mask to glasses. Glasses were chosen with an extremely broad nosepiece that had been ground to fit the appliance, care having been taken to align the glasses for best vision. The areas of attachment were roughened, and immediately before the liquid acrylic resin was applied to weld in a three-point contact, a camel's hair brush dipped in acetone was used to soften the frames of the glasses to insure a stronger union.

The initial welding of the glasses to the mask was done while the appliance was on the patient, to insure accuracy. The glasses and mask were removed to complete the welding. A second mix of quick-setting acrylic resin was applied by means of a small camel's hair brush, chloroform being used as a solvent to prevent the resin from setting too quickly.

After the attachments were completed, the appliance was tinted. In daylight, with a good grade of oil paints, the basic pinks, whites, blues, purples, reds and so forth were lightly stippled, and blackheads, moles, whiskers and so forth were simulated for a more natural appearance. Then the blood vessels were placed, especially on the nose and cheeks. This was done by fraying red nylon thread and teasing apart the fibers to the proper thickness. These fibers were then dipped in acrylic monomer, placed on the mask and teased into position. After the completion of the tinting and the placing of the blood vessels, the appliance was allowed to dry for three days.

After the paint had dried sufficiently, a soft camel's hair brush was used to flow a mixture of seven parts polymer and one part monomer gently over the entire tinted mask, care being taken not to pass the brush over any area the second time until the liquid had completely polymerized and dried, as too much monomer loosens the paint. If one part of the paint job is destroyed, it is almost imperative to repaint the entire appliance. After 15 minutes, the second layer of the mixture was spread over the mask. A shorter drying time was allowed with each successive layer until six coats sealed the paint permanently. Fine flowers of pumice on the finger tips were sufficient to roughen a glazed area of the appliance so as to give the artificial tissue a soft tone.

Several months of constant handling and cleansing of the appliance with soap and water did not destroy any of the color of the appliance. Constant abrasion from the tongue and food, however, destroyed some of the coloring of the lip, since acrylic resin with the color permanently within the resin was not used.

This patient (Fig. 4, right) was able to work for over two years until his eyesight began to fail. Approximately two years later, the right eye was removed, at which time the appliance was remodeled to include an artificial eye and was used in this form for the remaining two and one-half years of his life.

CASE 5

A 50 year old man with uncontrolled cancer of the face had had some surgery

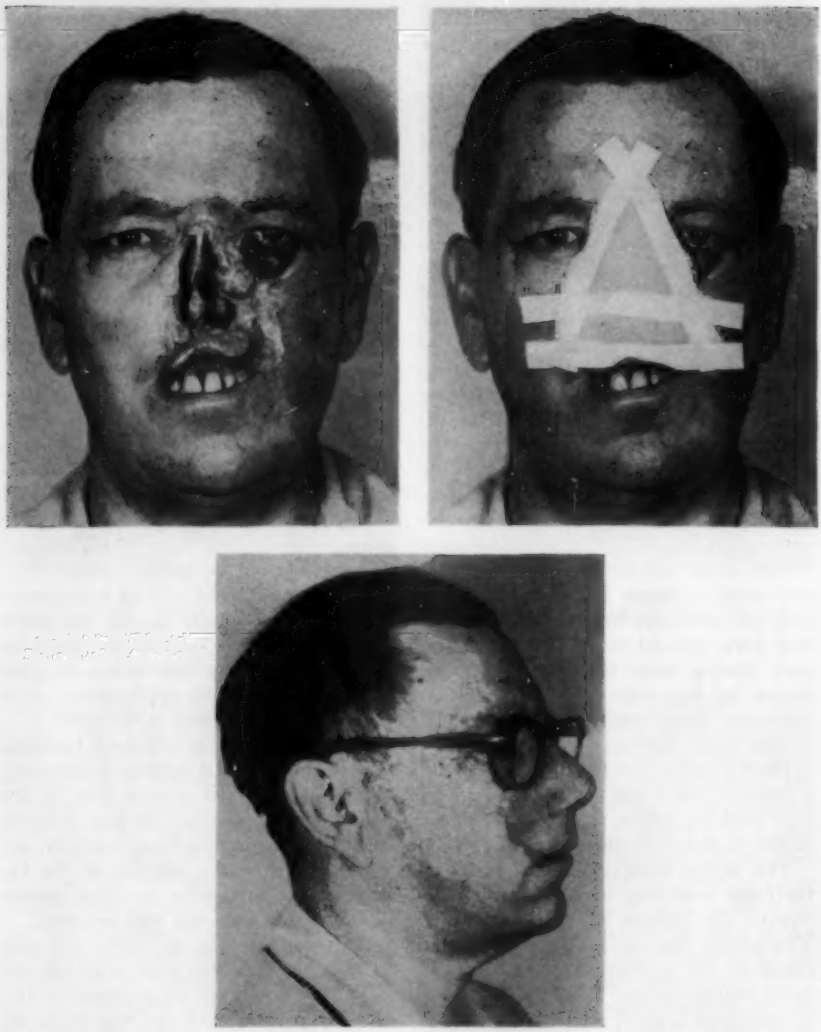


Fig. 5 • Above left: Patient with uncontrolled cancer. Above right: Patient before construction of mask. Below: Patient with mask

performed, but mostly radium treatment was employed to attempt to control the cancer (Fig. 5, above left and right).

The mask was constructed by the same procedure as in Case 4. In this instance, however, the nose of the patient's son was used as a model. An impression of the son's nose was taken by placing a ring of soft carding wax around the desired area, moist cotton was tucked in the

nostrils, and impression material was allowed to flow around the nose. Loose cotton fiber was used to form a lock for the layer of plaster. The patient was asked to flex his facial muscles.

The impression was dried by blasting with air, and melted wax was poured into it, care being taken not to have the wax so hot as to sear the impression material. This wax was almost ready to set when it was poured into the impression. The wax was immediately poured out, leaving a thin layer clinging to the impression. The pouring of the wax in and out was repeated until sufficient thickness of wax was obtained, each layer being allowed to harden before the next layer was added.

The wax nose was chilled slightly, removed from the impression, dipped in warm water to prevent brittleness and trimmed. The nose was then dipped in very warm water to soften the wax sufficiently to be remolded and reshaped. After the dipping was repeated, the nose was placed on the model and shaped to the correct position and peripheral adaptation. The construction then proceeded as described in Case 4.

The mistake was made of not extending this mask sufficiently so that it would rest on tissue that was not tender; therefore, it was necessary to extend the appliance so that the weight of the glasses and the mask would rest on healthy tissue.

This patient (Fig. 5, below), an electrician by trade, has supervised his employees and has actively engaged in all phases of his trade for the past two years.

CASE 6

A cancerous growth had been removed from the nose and lip of a 55 year old man, and the defect had been repaired by plastic surgery. At a later date, recurrence was noted, necessitating a more radical surgical procedure (Fig. 6, left). In order to watch the open region so as to determine whether the cancer was controlled before plastic surgery was again

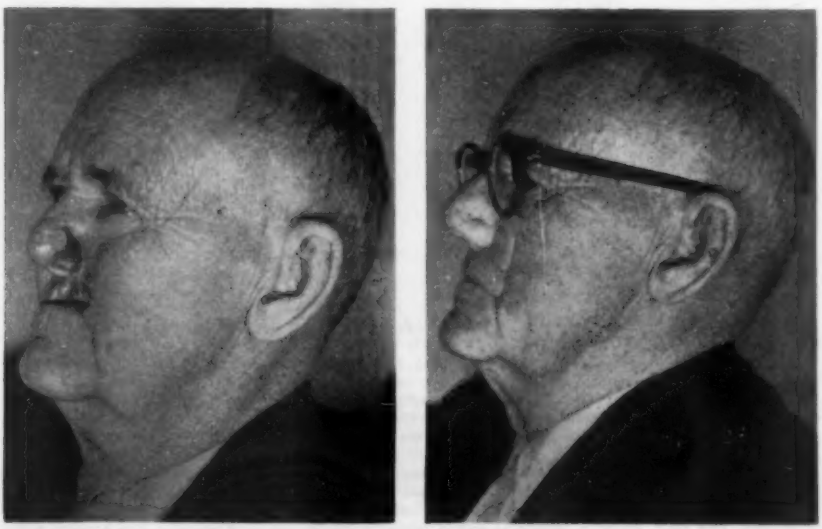


Fig. 6 • Left: Patient after removal of cancerous growth. Right: Prosthesis in place

attempted, it was decided to use a face mask temporarily.

A temporary face mask, consisting of a nose and lip attached to a pair of glasses, was constructed. The impression was taken in the manner described in Case 4. The nose was carved from wax and the mask was fabricated according to the procedure previously mentioned. Where needed, marginal adaptation was perfected with Kadon, using a slightly fluid mix applied with a small camel's hair brush while the mask was in position. After the initial set of the resin, the mask was removed to allow the resin to polymerize completely. The natural oils of the tissue served as a separating medium, and no discomfort or irritation of the tissues was noted.

This patient was referred to me to have a prosthesis made two weeks after surgery. To show how natural such an appliance can look (Fig. 6, right), one week later, when this patient was appearing for a demonstration at a meeting of physicians, the surgeon who had referred the patient for the prosthesis mistook him for another physician attending the meeting. During their conversation he thought he had known the gentleman before, and was suddenly surprised to find the latter was the patient on whom he had performed surgery only three weeks before. This occurrence gave a great mental lift to the patient who previously had been contemplating suicide.

SUMMARY

1. Six cases presented exemplify the fact that for patients with oral and facial defects, prosthesis is of primary importance in their rehabilitation physically, socially and in the business world. The required technics are not beyond the skills of the dentist. The profession has the duty of performing this service for the physically handicapped.

2. The last of the cases involving facial defects demonstrates the use of facial masks as a temporary means of affording the victim of destructive disease of the facial tissues cosmetic rehabilitation while awaiting plastic surgery.

833 Elm Street

The Fitness of Technical Terms • So far as individual words are concerned, they prove their fitness by surviving, and if they do survive, little more can be said. They may be unattractive, they may be illogical, but if they make their way, neither taste nor logic can furnish much opposition. Antibiotic is neither very attractive nor very clear, but it seems to be well established. Would anyone seriously urge replacing hydrogen by protium because the latter is a logical mate for deuterium? It would be much if we could exclude words that are forbiddingly impersonal, the extreme hybrids and abbreviations which a recent writer, S. Potter, has aptly called "shadowy and inhuman devices appearing and disappearing in that strange border country which separates speech from the mathematical sciences." Where possible, technical terms should not be too closely crowded in any passage; they need a little air around them, unless their sole purpose is to convey information as impersonally as possible—a purpose that can be overdone. The most severely technical words have to consort with those of a less austere sort, and the judicious writer should pay some heed to making them get along amicably. *Charles E. Whitmore, "The Language of Science," Scientific Monthly 80:191 March 1955.*

Dentistry in the Confederacy

William N. Hodgkin, D.D.S., Warrenton, Va.

The advanced and wider utilization of the dentist in his professional capacity by the Confederate Army, as contrasted with the practice by the Union Army, in the War Between the States, has been noted by dental historians. Koch[1] relates:

> During the Civil War an effort was made to secure dental service in the Union Army, but the idea was not received with favor by the War Department. A similar effort was made in the Confederate Army and it succeeded in so far that several dentists were regularly commissioned as members of the medical department and assigned for duty at the larger hospitals.
> In the Union Army the only dental service was that of lancing "gum boils" and the extraction of teeth.

Taylor[2] has this brief note:

> It was related that during the war between the North and the South several dentists were carried in the army hospitals of the Southern Confederacy.

The material in this restricted study is limited almost wholly to Virginia. The four year accumulation of the records of Surgeon-General Samuel P. Moore was destroyed in the burning of Richmond in April 1865. However, resource has been had to the correspondence of Surgeon William A. Carrington, Medical Director of Hospitals in Virginia, as preserved in the National Archives, and to other official records. The findings are sufficient to confirm a fairly wide and importantly helpful service in the Confederate Army. Indeed, the recognition at high levels of dental personnel, and their organizational status, would seem to warrant the dubbing of a fairly well defined "Confederate Dental Corps."

Among the factors which brought the Confederacy's dental service to levels and usage theretofore unknown in military history may be cited the following:

1. The overwhelming demand by soldiers for dental service at intervals between action when army forces were stationed near cities having available dentists.

2. The inability of the private soldier to pay for his own dental care, especially in the later days of the Confederacy. The price demanded for gold foil in 1864 and 1865 was $64 an ounce in gold coin, or, in the depreciated currency of the Confederacy, about $3,840 an ounce. Prevailing dental fees ran on the high scale of $120 for a gold filling, $20 for an extraction, with other services in proportion. For a single gold filling the Confederate soldier, drawing $18 a month, would have had to give six months' pay. Lest dental fees be unwittingly criticized, let it be known that contemporary prices of other goods and services were at the

1. Koch, Charles R. E. History of dental surgery. Fort Wayne, Ind., National Arts Publishing Co., 1910, Vol. 1, p. 138.

2. Taylor, J. A. History of dentistry. Philadelphia, Lea & Febiger, 1922, p. 208.

same scale; a coat could be had for $1,800, shoes for $300, cavalry boots for $1,000 and an ordinary felt hat for from $300 to $500.

3. The resourcefulness of Surgeon-General Samuel P. Moore in meeting the responsibilities for the total health care of the forces under the charge of the Medical Department. Moore's warm advocacy and support of dental service is attested by the tribute of Burton:[3]

> Dentists of every land owe a debt of gratitude to a man who gave official recognition to the importance of their profession, and who extended to those under him every encouragement in the prosecution of their arduous duties; . . . they owe more to Samuel Preston Moore, Surgeon-General of the late Confederate States army, than to any man of modern times.

4. The brilliant accomplishments of James Baxter Bean in caring for maxillofacial wounds in the battles about Atlanta, which led to a heightened appreciation of the scope of oral surgery.

5. The possible continuing interest and influence of President Jefferson Davis in the advantages of dental care of the military. As Secretary of War in the Pierce administration (1852-56), he had been approached by Edward Maynard of Washington, advocate of an army dental corps, and had "received the proposition as one of great value,"[4] and lent it his support. It may be assumed that the stringencies of Confederate days lent force to his earlier persuasions.

Of the slightly more than 100 dentists listed in the 1860 census as residing within the present boundaries of Virginia, 61 entered the service of the Confederacy. Most of these had official service records from the early days of conflict, either in the ranks or as contract dentists.

Whereas every record witnesses their patriotic response to the call of duty, there is likewise evidence that they were sensitive to all measures touching their professional status. Such controversies began with the rigid, though ambiguous, conscription laws of the Confederate Congress, under the provisions of which dentists were conscripted. Whereas physicians of "seven years practice" were exempt from military service under this act, there was no specific mention of dentists. Naturally there arose the question as to whether the Congress intended to include the latter as special practitioners. Despite the ruling of the War Department through its representative, Judge Campbell, and the eminent legal opinion of General George W. Randolph as Secretary of War of the Confederate States that such exemption was intended, the conscription of dentists was continued by those in effective posts.

However, there had been overtures looking to the employment of contract dentists previous to or concurrent with the conscription measures, as indicated by a letter of Medical Director W. A. Carrington to Surgeon James B. McCaw, head of Chimborazo Hospital, Richmond, dated March 20, 1863, inquiring McCaw's:

> . . . opinion as to the advisability of a Surgeon Dentist making visits to your Hospl. at stated times say 2 or 3 weekly for such simple operation on the teeth (Principally extractions) as may be required. The services of a Dentist very skillful on extraction may be secured on contract.[5]

But the dental practitioner of the day was more concerned with conscription than with contract. In December 1863 there was presented in the Confederate Congress the following "Petition of Dental Surgeons of Ten Years Practice for Exemption from Military Service" (Fig. 1):

3. Burton, W. Leigh. Dental surgery as applied in the armies of the late confederate states. A.J.D.S. I, 3rd ser.:180 Aug. 1867.

4. Hodgkin, William N. Edward Maynard, a progenitor of the army and navy dental corps. J.A.D.A. 28:1969 Dec. 1941.

5. Letters received and sent, Chimborazo Hospital, 1861-1865. Chapter VI, vol. 708, War Department Collection of Confederate Records. The National Archives. (Original letters.)

PETITION

Richmond, Dec. 29, 1863

To the Congress of the Confederate States:

We, the undersigned, DENTAL SURGEONS residing in the Confederate States humbly pray that we may be exempted from military service in the armies of the Confederate States, for the following reasons:

1st. Dental Surgery being a specialty of the medical science, Dental Surgeons treat diseases which are not usually included in the practice of a general practitioner of Medicine and Surgery. Dental Surgery embraces a wide field of Pathology. The diseases of the teeth, the gums, the mouth and surrounding organs, and fractures of the bones of the head and face are included in it; and to ensure competency in a practitioner of Dental Surgery, many years of experience are required.

2nd. The proportion of Dental Surgeons to the population is already very small. It is estimated that there are about five hundred in the Confederate States, and of this number about two hundred and fifty are liable to conscription.

3rd. Whilst we consider ourselves exempt from military service under laws of Congress exempting "Physicians," under a fair construction of it, in some instances this right has been questioned by the military authorities; and we beg, therefore, that the same exemption may be extended to us as *Special Practitioners* of Medicine and Surgery.

4th. We believe our services to be absolutely essential and necessary to the health and comfort of every community; and we therefore pray, that all Dental Surgeons, provided they are in good standing and have been for *ten years* in the actual practice of Dental Surgery, may be exempted from military service.

(Signed)

W. B. Pleasants
W. Leigh Burton
Jos. Woodward
John Mahoney
R. Finley Hunt
F. Davison
G. W. Jones
George B. Steel
J. S. Michard
H. Clarke
J. H. Wayt
J. Edward Chase
M. A. Blankman

Approved:

S. P. Moore,
Surgeon-General
Jas. F. Harrison,
Surgeon C.S.N.
In charge of office Medicine and Surgery, Navy Dep't.

RECOMMENDATIONS

We, the undersigned, are of the opinion that the professional services of DENTAL SURGEONS are absolutely essential and necessary to the health, comfort and well being of every community, and think they should be exempted from military service under the conditions prayed for by the within practitioners.

(Signed)

Wm. A. Carrington, Med. Director
E. W. Jones, Surgeon, Med. Purveyor
Ch. Bell Gibson, M.D., Prof. Surgery, Med. Col. Va.
James H. Conway, Prof. Obstetrics, Med. Col. Va.
L. S. Joynes, M.D., Prof. Inst. Med. in Med. Col. Va.
B. R. Wellford, M.D., Prof. Mat. Med. in Med. Col. Va.
J. B. McCaw, M.D., Prof. Chem. & Phar. Med. Col. Va.
David H. Tucker, M.D., Prof. Theo. & Proc. Med. Col. Va.
James Dunn, Surgeon, Member Army Medical Board
St. George Peachy, Surgeon, Member Army Medical Board

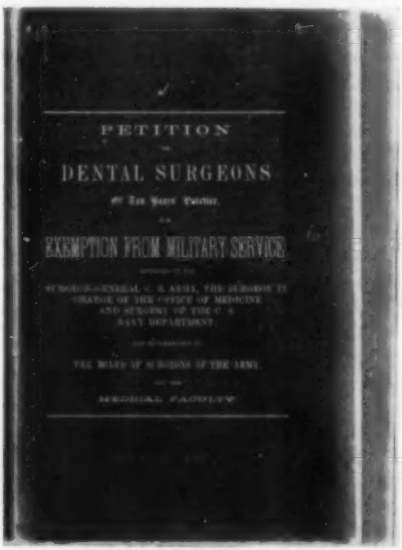


Fig. 1 • Petition of the dental surgeons of ten years' practice for exemption from military service, December 1863

A. E. Peticolas, Surgeon, Member Army Medical Board
Henry F. Campbell, Surgeon, Member Army Medical Board
Thos. H. Williams, Surgeon, C.S.A.
Chs. Brewer, Surgeon, P.A.C.S.
W. B. Sinclair, Surgeon, C.S. Navy
F. W. Hancock, Surgeon, P.A.C.S.
James Beale, M.D.
C. W. P. Brock, Ass't. Surgeon, P.A.C.S.
Jas. B. Read, Surgeon, P.A.C.S.
Alex. Y. P. Garnett, M.D.
J. G. Cabell, Surgeon, P.A.C.S.
Peter Lyons, Surgeon, P.A.C.S.
Ro. W. Haxall, M.D.
A. Snead, M.D.
O. A. Crenshaw, M.D.
F. H. Deane, M.D.
M. Burton, M.D.
M. Howard, Surgeon, P.A.C.S.
J. P. Little, M.D.
Geo. W. Carrington, Ass't. Surg., P.A.C.S.
R. S. J. Peebles, Surgeon, P.A.C.S.
Ro. G. Cabell, M.D.[6]

All the dental signers of the aforementioned petition may be placed definitely as in Richmond on this date save R. Finley Hunt, who was practicing in Washington at the outbreak of war. Since he served the Confederacy and was known to have worn his Confederate gray for the remainder of his days, it is presumed he had come on to Richmond. Blankman, French born practitioner of Fredericksburg, had joined the Richmond group somewhat earlier.

While the majority thus relied on petition for a favorable interpretation of the disputed conscript provisions, at least one dentist brought the matter before the courts for legal test and decision. J. W. Hunter of Forsyth County, N. C., instituted a test case in his claim for exemption as a physician under the act. Following trial before the Supreme Court of that state, Chief Justice Richmond M. Pearson rendered an opinion in his favor.[7] Despite such eminent opinion, supported by rulings in the higher echelons in Richmond, the Confederate Congress finally inserted in the clause exempting physicians the words—"the term physicians *not to include* dentists," and thus the much disputed question was settled.

ASSIGNMENT OF DENTISTS

The first official assignment of a dentist was apparently that of W. Leigh Burton to the Richmond hospitals in March 1864. He reported the number of operations performed "exceeds all belief," adding:

> In addition to treatment of fractures of the bones of the face, a day's work consisted of from twenty to thirty fillings, the preparation of the cavities included, the extraction of fifteen or twenty teeth, and the removal of tartar *ad libitum*.[8]

Medical Director Carrington alerted the Richmond hospital heads of the available services in a directive of June 14, 1864, thus:

> You are directed to have the patients in the Hospital under your charge who require dental operations collected on one day in each week and in some convenient place and notify Dr. Burton corner 8th and Franklin Streets so that he can attend at the time specified and perform the necessary operations.[9]

Surgeon-General Moore had moved with dispatch to make available the detail of dentists for duty in the hospitals and, after a few months of experiment, he caused the following order to be issued:[3]

> Office of the Medical Director
> C.S. Hospitals in Virginia
> Richmond, Va., Nov. 4, 1864
>
> Circular No. 15
>
> I. As far as practicable in future, the operations of dentistry required in General Hospitals in Virginia, will be performed by officers, soldiers or conscripts assigned to those duties, who are dentists by profession.

6. C.S.A. Miscellaneous pamphlets no. 1, 1861-66. Library of Congress, rare book collection.

7. Fleming, J. Martin. History of the North Caroline dental society. Raleigh, N. C. Bynum Printing Co., 1939, p. 33.

8. Letters sent and received, Medical Director's Office, Richmond, Va., 1864-65. Chapter VI, vol. 364. War Department Collection of Confederate Records. The National Archives.

II. Examinations will be made, at such time as may be fixed by the surgeon in charge, of each officer and soldier admitted into hospitals, and the necessary operation performed with the concurrence of the attending Medical officer.

III. Dentists are expected to be provided with their own instruments, but the necessary materials and files will be purchased with the hospital funds, and requisitions made for other instruments thought necessary.

IV. Dentists will have the rank, pay and perquisites which their position in the army entitles them, and in addition, such extra duty pay for extraordinary skill and industry, as the Surgeon-General will allow, in accordance with General Order, No. 66, A.&I.G., office, current series.

V. Monthly reports of Dental operations and accompanying registers in accordance with forms furnished, will be forwarded through the Surgeon in charge and through this office, to the Surgeon-General by the 5th of the month succeeding.

(Signed) William A. Carrington
Medical Director of Gen. Hospitals in Virginia

The wider assignment of dentists to hospitals in Virginia was unquestionably spurred by events in the deep Southern theater of war during June 1864. Had the motion picture "Gone with the Wind" depicted a handsome and stately young man of about 30 years of age going about the wounded, giving gratuituously of his facile skill to those suffering from wounds of the face and jaws, following the action about Atlanta, the scene would have been authentic. For E. N. Covey, a medical inspector of the Confederate Army, describes just such a role in the ministrations of James Baxter Bean, then in civilian practice in Georgia.[9] So impressed was Covey by Bean's accomplishments with the interdental splint, especially in the face "of the frequency of this class of fractures in military surgery" and what he described as "the almost total want of success among surgeons, with the treatment usually adopted,"[10] that he took the responsibility of directing that all the cases at Atlanta should be sent to one hospital for his treatment. Burton relates that over 100 cases were handled by Bean at Atlanta with invariable success.[3]

The validity of Covey's plaint in the "want of success among surgeons in the treatment usually adopted" may be underscored in Burton's description of the usual surgical practice in handling jaw fractures; namely, the employment of a material made of pasteboard softened with vinegar and water, which was adapted in its pastelike state as an extraoral splint over the soft tissues of the face and, on hardening, formed a sort of papier-mâché splint. The uncertain positioning of fractured bones, the fouling of the absorbent splint by mouth secretions and wound discharges, together with a lack of access to wounded regions, resulted in a high percentage of failures.

Covey's reference to "one hospital in Atlanta" to which all jaw fractures were sent, remains indefinite. The identity of the hospital has eluded all effort.

With the fall of Atlanta, the cases under treatment were removed to the Blind School Hospital at Macon, Ga., and a ward of that institution was opened to care for all jaw cases in the hospital department of the section. Identity of the Blind School Hospital (an institution converted into a hospital) is established by Bean's case reports, in which admissions to the Blind School Hospital are noted. Thus the Blind School Hospital, though yielding in priority to the Atlanta institution, becomes the first identifiable hospital in military or dental history known to have had a ward devoted exclusively to maxillofacial surgery (Fig. 2).

Reports of Bean's notable success, coupled with a high incidence of jaw wounds as troops fought increasingly from breastworks, impelled officials in Richmond to make the advanced mode

9. Covey, E. N. The interdental splint. Richmond M.J. Feb. 1866, p. 81-91.

10. Schwartz, L. Laszlo. Development of the treatment of jaw fractures. J. Oral Surg. 2:193 July 1943.

Fig. 2 • Blind School Hospital, Macon, Ga.

of treatment more widely available. Surgeon-General Moore ordered Bean to Richmond where he presented the technics of the interdental splint before the Army Medical Board of the Confederate States at the office of W. Leigh Burton. General adoption of the technic was recommended unanimously, and dentists on nearby duty were called in for instruction.

Contemporary orders and correspondence reflect the stepped-up interest. Witness the following:

S.G.O. Circular No. 24—February 6, 1865

I. Medical Directors of Hospitals will, without delay, select a thoroughly lighted ward, (gas-lighted, if practicable) in some of the Hospitals under their jurisdiction, to which will be sent for treatment, by Bean's apparatus, all cases of fracture of the superior and inferior maxillary bones, now in Hospital, or that may hereafter be admitted.

II. In the construction, adjustment and use of this apparatus, the attending Surgeon will be aided by the Dentist assigned as such to the Hospital selected.

III. The Ward selected being reported to this Office, the inventor will visit the Hospital to confer with the authorities on the preparation, adjustment and use of the apparatus.[12]

To implement these arrangements the following order went to Bean:

Confederate States of America
Surgeon General's Office
Richmond, Va., Feb. 18, 1865

Sir:
In pursuance of orders, you are instructed to hold yourself in readiness to be ordered to any hospital, where your services may be required in the application and adjustment of your apparatus for treating fractures of the inf. and sup. maxillary bones.

Very respectfully,
Your Obt. Servant,
S. P. Moore,
Surg.-General, C.S.A.[12]

Dr. James B. Bean
Richmond

Though Medical Director Carrington designated a ward in the Receiving and Wayside Hospital, at the corner of Franklin and Nineteenth Streets, Richmond,[11]

11. Blanton, Wyndham B. Medicine in Virginia in the nineteenth Century. Richmond, Va., Garrett & Massie, 1933, p. 305.

12. Letters, orders and circulars sent, Surgeon General's Office, Richmond, Va. Vol. 741, chapter VI, War Department Collection of Confederate Records. The National Archives.

to which surgeons in charge at Richmond and Petersburg were directed to send cases "for treatment of fractures of the maxillary bones,"[12] and likely some cases were cared for there, Burton recalls that Surgeon-General Moore later "ordered a ward to be prepared at the Robertson Hospital [at the corner of Third and Main Streets, Richmond] for the exclusive treatment of all cases in which it [interdental splint] could be applied,"[3] and it appears that the latter hospital saw greater use in the specialized service (Fig. 3).

Various assignments of dentists have been found in the Confederate hospitals of Virginia, and Burton attests that such assignments were made "to the most important points throughout the Confederacy."[3]

PAY OF DENTAL PERSONNEL

The pay of the dental personnel of the Confederacy is indicated in the advices of Medical Director Carrington to Surgeon-General Moore under date of January 30, 1865:[12]

In answer to your communications of Jan. 28 I respectfully inform you that the Dentists of the Hospitals in Richmond do not mess or lodge at the Hospital. They receive the pay and allowance of detailed men with the extra duty pay you allow them, amounting in value to about $10 per diem, viz:

Extra duty pay at $4 per diem for 30 days	$120.00
Commutation for room	40.00
Company pay	18.00
Monthly rations valued at	125.00
Clothing 2 suits yearly worth $15 per mo.	15.00
	$318.00

Fig. 3 • Robertson Hospital, Richmond, Va.

The rank of dental personnel has been found almost without exception to have been that of Hospital Steward, with the insignia similar to that of a first sergeant, save that the chevrons on the coat sleeves and the stripes down the trousers were black—common to the medical personnel—as contrasted with the light blue of the infantry, the scarlet of the artillery and buff of the cavalry.[13]

Those dentists whose service in a professional capacity has thus far been established, and who may be said to have comprised the "Confederate Dental Corps" are here listed:

Angle, Solomon, Danville

Enlisted as private in Company E, 23rd Regiment, Virginia Infantry, May 7, 1861. Company muster roll for July and August 1862 shows him absent. "Formerly hospital Steward Regt. Now details at Howard Grove Hospital, Richmond." Occupation shown as dentist.[14]

Bean, James Baxter,[8] Georgia and Richmond

Bidgood, Richard Maurice,[8] Farmville

W. A. Carrington to Senior Surgeon, Lynchburg, Sept. 6, 1864:
Enclosing orders under which "Hosp. Steward Bidgood, will be required to visit in rotation, at stated times, the Hospitals at Lynchburg, Va. and perform such operations on the teeth and mouth as are found necessary. . . . In addition to plugging, cleaning and extracting teeth the Dentists have been serviceable in adjusting fractures of the jaw and operating on the mouth and fauces."

Burton, Watkins Leigh,[8] Richmond

Previous service: Burton had been nominated "by the Governor to the Advisory Council of the State of Virginia as a Captain of Volunteers on April 30, 1861. Appointment made accordingly."[15]

Chase, J. Edward,[16] Richmond

Company A, 17th Regiment, Virginia Infantry. Detached service as Division Dentist.

Daughtrey, Marmaduke E., Portsmouth

Company A, 16th Regiment Virginia Infantry, and Hospital Steward, 14th Regiment. Surrendered at Appomattox.[16]

Doggett, Cyrus K., Fincastle

Enlisted as private May 1, 1861, at Norfolk. Detailed by Secretary of War as Hospital Steward, Battery B, 19th Battalion of Artillery.[17]

Grant, Robert G., Abingdon

Enlisted April 16 (year not shown) as private in Company F, 13th Battalion Virginia Reserves, at Abingdon, Va. The company muster roll for September and October 1864, last on file, shows him absent with the remark: "Detailed as steward for Hospital of 13th Battn."[14]

Harris, J. W., Harrisonburg

W. A. Carrington to Surgeon Davis, Harrisonburg General Hospital, November 3, 1864:
"Private J. W. Harris is detailed for duty at Gen. Hospl. Harrisonburg, Va. and assigned to duty as Dentist to that Hospl."[15]

Thackston, Wm. W. H., Farmville

Enlisted April 20, 1864, as private of Company D, 3rd Regiment Virginia Reserves. His name appears on a Register of General Hospital, Farmville, Va., with remarks as follows: "Richmond, Va., Mch. 3, 1865. Detailed from the Reserves as Dentist at Hosptl. Farmville. Will be allowed to reside at his residence near Burkeville, Va. and visit the Hospl. once weekly or as often as necessary. Wm. A. Carrington, Med. Dir."[14]

Wilkinson, W. S., Amelia County

Listed in report of J. Gravatt, Surg. in charge of Receiving and Wayside Hospital, Richmond, to Surg. W. A. Carrington, Medical Director, of medical officers including physicians employed under contract and hospital stewards for the month ending Feb. 15, 1865. "W. S. Wilkinson, Hospital Steward, date of commission November 4, 1862. On duty as dentist."[15]

Williams, S. H., Alexandria

13. Roberts, Deering J. Organization and personnel of the medical department of the Confederacy. The Photographic History of the Civil War, Vol. X. New York, Review of Reviews Co., 1911, p. 350.

14. Department of the Army, Office of the Adjutant General.

15. Proceedings of the Advisory Council of the State of Virginia. War of the Rebellion, Official Records of the Union and Confederate Armies. Washington, G.P.O. 1897. Series I, Vol. LI, Part II, p. 54-55.

16. Confederate Records, Vol. II, p. 111. and p. 215.

17. Size Rolls War Dept. Confederacy. 43-5.

Enlisted as private at Spottsylvania Court House in company organized as "Mt. Pleasant Riflemen" in 1861. Detailed March 11, 1865 —S.O. 58.[18]

The above listing is limited to those with record of official professional service. Excluded are unofficial dental services performed for compatriots as reported in family correspondence, authentic notes of services at Camp Lookout, Md., and other Union prisons where dentists cared for their fellow prisoners "to keep their hands in"; and such instances as J. Martin Fleming's vivid description of E. Vines Turner—a captain on the staff of General W. H. T. Walker —operating in the field "with a forked branch as a head-rest."

18. Confederate Records, Vol. III, p. 396.

Facts in refutation of claims by opponents of fluoridation

A. P. Black, Ph.D., Gainesville, Fla.

When the story of fluoridation is examined in retrospect, it becomes clear that its development as a recognized public health measure may be divided into three distinct periods. The first and longest was a period of study and observation which could be called the Period of Discovery, for during that period the idea of fluoridation was born. It began in 1906 with the now classical studies of G. V. Black of the enamel lesions which were found on the teeth of most of the native population of Colorado Springs, Colo., and which in 1909 he called "mottled enamel." It witnessed the publication in 1916 of a series of five papers by G. V. Black and Frederick S. McKay[1] describing for the first time these lesions and indicating that some constituent of the water supply might be the causative agent. It witnessed the important studies carried out at Britton, S. Dak.;[1] Oakley, Idaho,[2] and Bauxite, Ark.[3] The latter study led directly to the discovery by Churchill in 1931[4] that the fluoride ion present in the water supply was the cause of the mottling. In the period 1933 to 1937, Dean and Elvove[5] reported that fluoride in concentration of 1 ppm or less had no public health significance. The period was brought to a close by the well-planned field surveys of Dean,

Presented before Section on Public Health Dentistry, ninety-fifth annual session, American Dental Association, Miami, Fla., November 8, 1954.

Head, department of chemistry, University of Florida.

1. Black, G. V., and McKay, F. S. Mottled teeth: an endemic developmental imperfection in the enamel of teeth heretofore unknown in the literature of dentistry. D. Cosmos 58:129 Feb.; 477 May; 627 June; 781 July; 894 Aug. 1916.

2. McKay, F. S. Mottled enamel: the prevention of its further production through a change of the water supply at Oakley, Ida. J.A.D.A. 20:1137 July 1933.

3. Kempf, G. A., and McKay, F. S. Mottled enamel in segregated population. Pub. Health Rep. 45:2923 Nov. 28, 1930.

4. Churchill, H. V. Occurrence of fluorides in some waters of the United States. J. Ind. & Eng. Chem. 23:996 Sept. 1931.

5. Dean, H. T., and Elvove, E. Studies on the minimal threshold of the dental sign of chronic endemic fluorosis (mottled enamel). Pub. Health Rep. 50:1719 Dec. 6, 1935.

Elvove and Arnold, culminating in the announcement by Dean in 1942[6] that caries incidence was about 60 per cent less in areas where the fluoride content of the water was 1 ppm or more.

Since it was now evident that concentrations of the fluoride ion substantially in excess of 1 ppm resulted in dental fluorosis and that concentrations less than 1 ppm were associated with a significant increase in the amount of dental caries, it was inevitable that the suggestion should be made that the concentration of fluoride ion in public water supplies should be adjusted so as to provide this optimum concentration.

The second period in the development of fluoridation should perhaps be called the Period of Controlled Experimentation, because it was during this period that the procedure was on trial by professional scientists. Ast,[7] in 1943, presented a detailed program for testing what was then called "artificial fluoridation," and the following year base-line studies were begun on large groups of children at Newburgh and Kingston, N. Y., and at Grand Rapids and Muskegon, Mich. Fluoridation was begun at Grand Rapids in January 1945 and at Newburgh in May of the same year. Because of the publicity given to these experiments, a few communities, unwilling to await the results, began to fluoridate their water supplies. Five communities initiated fluoridation in 1946, 4 in 1947, 8 in 1948, 19 in 1949, and 39 in 1950. Thus, the close of the first five years of the experimental period found 78 cities and towns employing fluoridation. Early in 1950[8] the United States Public Health Service released information that the Grand Rapids experiment was showing striking reductions in dental decay in the 5, 6, and 7 year old children. Since it had been assumed that 10 to 12 years would be required to establish possible benefits, this information convinced many other communities of its success, and the number of cities and towns has increased rapidly from that date until the present, reaching a peak for the ten year period in 1952.[9]

On August 12, 1954, Osawatomie, Kan., became the 1,000th community to fluoridate its water supply, and at present more than 18,000,000 people are consuming fluoridated water. An additional 3,500,000 people are consuming, and have consumed for years, water naturally containing concentrations of the fluoride ion needed for maximum protection. In July 1954 Chicago joined the rapidly growing list of major American cities to adopt fluoridation. These facts make it evident that fluoridation has now reached full stature as a recognized public health procedure, and that another great landmark in man's long fight against disease has been passed. The year 1954 may therefore be looked upon as the beginning of the third period which may be characterized as the Period of Development. There is every reason to expect that its rapid adoption as a public health procedure, both in this country and abroad, will continue, and that before another decade has passed fluoridation will be as routinely practiced for public water supplies as chlorination is today.

ANSWERS TO OBJECTIONS

The great progress that has been made has not been made without difficulties. Through December 31, 1953, 115 towns had held referendums on fluoridation.

6. Dean, H. T.; Arnold, F. A., and Elvove, E. Domestic water and dental caries. V. Additional studies of the relation of fluoride in domestic water to dental caries experience in 4425 white children, age 12 to 14 years, of 13 cities in 4 states. Pub. Health Rep. 57:1155 Aug. 7, 1942.

7. Ast, D. B. Caries-fluorine hypothesis and a suggested study to test its application. Pub. Health Rep. 58:857 June 4, 1943.

8. Dean, H. T., and others. Epidemiological studies of fluoride waters and dental caries. Compilation of basic studies conducted by the National Institutes of Health on domestic water and dental caries. Washington, D. C. National Institutes of Health, Federal Security Agency, Public Health Service, 1950.

9. Task Group E 5-10. A decade of fluoridation. J.A.W.W.A. 46:787 Oct. 1954.

Sixty-three communities with a population of 2,159,438 had approved it, while 52 communities with a population of 1,789,404 had rejected it. Fourteen communities in nine states discontinued fluoridation after it had been put into practice. By 1951 opposition had developed throughout the country manifested by printed material, letters to the editor, newspaper articles, mimeographed reproductions of adverse statements on the subject, and articles in national magazines. Many of the statements which recur in this material are so fantastic that they do not merit serious consideration. A careful study of a typical cross section of this material reveals that most of the arguments fall into a common pattern, and it is the purpose of this paper to present the facts which may be used to refute them.

Does Fluoridation Actually Reduce Tooth Decay? • There are still numerous opponents of fluoridation who maintain that fluoridation is not effective in reducing tooth decay, and there are others who maintain that it is only good for children up to eight years of age. Table 1[10] presents the most recent data. Findings at Grand Rapids and Newburgh may be summarized as follows:

1. After eight years of fluoridation at Grand Rapids, dental caries among six year old children who have had only fluoridated water during their entire life has been reduced 70.8 per cent.

2. A totally unexpected result has been a 25.0 per cent reduction in caries in the 16 year old group who were eight years of age when the experiment began.

3. At Muskegon, Mich., the control city where fluoride-free water is used, the incidence of dental caries is unchanged and approximates the national norm.

4. The Grand Rapids caries rate in six year old children is identical with the caries rate of the same age group at Aurora, Ill., where the water supply contains 1.2 ppm of naturally occurring fluorides, indicating that added fluoride is identical in nature and effect to fluoride naturally present in the water supply.

Table 1 • Fluoridation study projects

Community	Date started	Report period	Age group (years)	Reduction in decay* (per cent)
Grand Rapids, Mich.	1945	8 years	6	70.8
			7	52.5
			8	49.2
			9	48.1
			13	39.7
Brantford, Ontario, Canada	1945	7 years	6	59.4
			7	69.5
			8	51.5
			9	46.2
			13	32.9
Newburgh, N. Y.	1945	7 years	6	69.4
			7	67.8
			8	40.4
			9	51.4
Evanston, Ill.	1947	4 years	6	73.6
			7	56.4
			8	35.4
Sheboygan, Wis.	1946	6 years	9-10 (4th grade)	35.3
			12-14 (8th grade)	29.7

*Decayed, missing, filled (DMF) permanent teeth.
Source: Committee on Dental Health of the Food and Nutrition Board, National Research Council—National Academy of Sciences.

In the Newburgh-Kingston studies, the results are as follows:

1. Children in the six and seven year age groups at Newburgh, where fluoride is added, have 60 per cent less caries than children in the same age groups at Kingston, where fluoride-free water is used.

2. The percentage of children in the five, six and seven year age groups at

10. American Dental Association, Bureau of Public Information. Information bulletin, May 1954.

Newburgh with no decayed deciduous teeth is twice as high as at Kingston.

3. The general decay rate for deciduous teeth at Newburgh is 59 per cent lower for five year olds and 48 per cent lower for six year olds than for the same age groups at Kingston. The DMF rate in the 6 to 12 year age group at Newburgh is 47 per cent lower than the same age group at Kingston.

4. The most careful and extensive pediatric examinations of the hundreds of children in each city have disclosed no harmful effects of any sort which could be attributed to the consumption of water containing fluoride.

Data are now becoming available from all parts of the nation that indicate that the rate of reduction in various age groups is essentially the same in spite of varying climatic conditions.

Is Fluoridation Mass Medication? • The statement is often made that fluoridation constitutes mass medication and that it constitutes, in fact, the practice of socialized medicine. The following facts serve to refute the idea completely.

1. The purpose of medication is the cure of disease in some form. Fluorides are not added to water for therapeutic purposes, namely, to treat or to cure a disease. They constitute the only preventive tool which has ever been available to dental science throughout its long history. Fluorides do not cure a diseased condition of the teeth, namely caries. They perform a much more important service in that they help nature to build more resistant teeth.

2. Fluorides occur very widely both in this country and abroad as a normal constituent of natural water, although their presence in so many natural waters was not realized or even suspected until its importance became evident. Table 2 documents this statement.[11]

In Table 2, it will be noted that 1,401 public water supplies in this country serving 4,188,000 consumers contain more than 0.7 ppm of fluoride. Of these, 877 supplies serving 2,156,000 people contain more than 1.0 ppm, and 283 water works systems, serving 703,550 people, contain more than 2.0 ppm of fluoride.

Table 2 • Natural fluoride content of water supplies in U. S.

Fluoride content ppm	No. states reporting	No. water works systems	People served 1950
Unknown	24+	2,768	6,508,930
Less than 0.69	44	10,506	87,736,609
0.70 to 0.99	38	524	2,031,900
1.00 to 1.49	35	424	1,025,578
1.50 to 1.99	24	170	427,119
2.00 to 2.99	28	171	405,125
3.00 to more	23	112	298,425

From this data, therefore, it will be understood that fluoridation consists of merely a process of supplementation—adjusting a normal constituent of most natural waters to its optimum content from the standpoint of public health. Obviously, since fluoridation is not medication, it cannot be considered the practice of socialized medicine.

Fluoridation Violates the Personal Rights or Religious Freedom of the Individual • The statement that fluoridation violates personal rights or religious freedom is employed, probably more than any other, by the opponents of fluoridation. The first five court decisions on fluoridation were rendered in 1952. They were in Northampton, Mass., San Diego, Calif., Chehalis, Wash., Baltimore, Md. and Fargo, N. D. In all cases, fluoridation was upheld by the court, and in all except the Northampton case, the main issue presented was the contention that fluoridation violates the fourteenth Amend-

11. Task Group E 5-10. Natural and applied fluoridation census. J.A.W.W.A. 44:559 June 1952.

ment to the Constitution, which indirectly protects persons from an invasion of their religious freedom by action of state and local governments. A discussion of all five of these cases by two outstanding New York attorneys may be found in the April 1953 number of the *Journal of the American Water Works Association.*[12] The court's decision in the San Diego case is typical of all of them and presents the philosophy of the law so clearly that it is quoted herewith.

> Religious freedom embraces two concepts: freedom of *belief* and freedom to *act*. The first is absolute, but in the nature of things the second cannot be, in that all acts or conduct of our citizens must conform to all reasonable regulations adopted by the respective governmental agencies acting within the scope of their authority. (*Rescue Army v. Municipal Court*, 28 cal. (2nd) 460,470.)
>
> In this connection our [California] State Supreme Court has said: "There can be no question, therefore, that a person is free to hold whatever belief his conscience dictates, but when he translates his belief into action he may be required to conform to reasonable regulations which are applicable to all persons and are designed to accomplish a permissible objective." (*Rescue Army v. Municipal Court, supra* (citing U. S. Supreme Court cases). To the same effect, *Hamilton v. Regents*, 293 U. S. 245 (Calif.); *Garielli v. Knickerbocker*, 12 Cal. (2nd) 85.)
>
> Therefore, no constitutional rights of any of the citizens of San Diego to freedom of religious belief would be invaded or violated by the adoption of the proposed program.

The ruling in the Baltimore case was phrased in similar terms:

> The term "religion" has reference to one's views of his relations to his Creator, and to the obligations they impose of reverence for his being and character, and of obedience to his will. It is often confounded with the cultus or form of worship of a particular sect, but is distinguishable from the latter. The first Amendment to the Constitution, in declaring that Congress shall make no law respecting the establishment of religion, or forbidding the free exercise thereof, was intended to allow everyone under the jurisdiction of the United States to entertain such notions respecting his relations to his Maker and the duties they impose as may be approved by his judgment and conscience, and to exhibit his sentiments in such form of worship as he may think proper, not injurious to the equal rights of others, and to prohibit legislation for the support of any religious tenets, or the modes of worship of any sect. . . . There have been sects which denied as a part of their religious tenets that there should be any marriage tie, and advocated promiscuous intercourse of the sexes as prompted by the passions of its members. And history discloses the fact that the necessity of human sacrifices, on special occasions, has been a tenet of many sects. Should a sect of either of these kinds ever find its way into this country, swift punishment would follow the carrying into effect of its doctrines, and no heed would be given to the pretense that, as religious beliefs, their supporters could be protected in their exercise by the Constitution of the United States.
>
> There is no question that under the Constitution of both the United States and the State of Maryland a person has a right to believe in any particular religion or faith that he cares to, but he does not have the absolute freedom to act in accordance with the tenets of any of those religions, but in his action he is bound to follow the laws duly enacted for the preservation of the health of citizens generally. He cannot object on religious grounds to laws enacted either by national, state, or city authorities. I find in this case that from the evidence none of the constitutional rights of the plaintiff to freedom of religious belief would be invaded or violated by the adoption of the proposed program.

It is also important to note that in the San Diego case the court rejected the argument that it was necessary for the defendant city to show that an emergency, epidemic, or danger of contagion or infection existed. The court found on the other hand, based on numerous precedents, that the city need only to show that particular measure "was reasonably necessary to promote health" which it had done.

Counsel for the American Water Works Association admirably summarized the five 1952 court decisions in the following words:

> Based on the foregoing court decisions and

12. Land, W. W., and Mosenthal, E. K. Court decisions on municipal water fluoridation. J.A.W.W.A. 45:387 April 1953.

the other available legal authorities, the only possible conclusion is that, upon compliance with local law, there is no legal obstacle to adopting and carrying out a fluoridation program. For this reason, it would appear that the decision of a legislative body on the matter is controlling and that the desirability of initiating or continuing fluoridation of a public water supply can properly and usefully be argued only before the local governing body.

There have been a number of other cases since 1952 culminating in June 1954 in the refusal by the United States Supreme Court to interfere with previous California Court decisions upholding San Diego's legal right to fluoridate its water supply. The record of all court actions to date may be summarized by the statement that the power of a municipality to fluoridate its water supply has been upheld by the courts in every instance where that power has been challenged.

Fluoridation Means Adding a Poison to the Water Supply • The statement that fluoridation means adding a poison to the water supply, which has sometimes been facetiously termed "operation rat poison," recurs very frequently and is the type of statement calculated to inspire fear in the minds of the great body of consumers who are not able to check the facts themselves. Again and again, in the anti-fluoridation literature, the properties of the fluoride salts are confused with those of gaseous fluorine. It is true that all of the compounds presently used for the fluoridation of water have long been known as poisons, when ingested in massive doses. However, the same statement is true of a great many of the materials with which every one comes in contact in their daily lives. The chlorine used for water sterilization, the alum used for water coagulation and the quick-lime and soda ash used for water softening are all corrosive poisons when ingested in massive doses. Both the spirits of ammonia and tincture of iodine, found in almost every home medicine chest, are corrosive poisons. Many of the medicines routinely used for the cure of diseases are deadly poisons when taken in sufficient doses. The truth of the matter is, of course, that when one characterizes a substance as "poison," one must specify the conditions under which it is used. In the concentration of 1 ppm employed for fluoridation, none of the fluoride compounds will produce toxic effects, with the possible exception of unobjectionable dental fluorosis of the enamel in a small percentage of cases. It should again be emphasized that fluoridation does not add anything new to most water supplies since, as has been shown in Table 2, the fluoride ion is a normal constituent of most water supplies and fluoridation merely adjusts its concentration to the optimum needed for protection of the teeth of children. Millions of people have been consuming fluoride-bearing waters all their lives without the slightest indication of any toxic effects.

Fluorides Are Stored in the Body and Produce a Variety of Diseases in Older People • Of all the objections which have been raised by the opponents of fluoridation, the statement that fluorides are stored in the body and produce a variety of diseases in older people is possibly the one which has caused most concern and aroused most fear in the minds of people everywhere. It has been stated, for example, that fluorides will make bones brittle; that it will increase deaths due to cancer, nephritis, heart disease, cirrhosis of the liver, and intracranial lesions. It has been stated that fluorides will produce brain damage and feeble-mindedness and, most fantastic of all, that it will break down the "wills" of people and make them susceptible to Communist propaganda. The truth of the matter is that the evidence attesting to the safety of the addition of fluoride ions to water in a dosage of approximately 1 ppm is overwhelming. The Kettering Laboratory at the University of Cincinnati has re-

cently listed more than 5,500 separate references in its *Classified Bibliography of Publications Concerning Fluorine and Its Compounds in Relation to Man, Animals, and Their Environment, including Effects on Plants.*

From the large number of competent statements covering this point, two will be quoted. The report of the Water Fluoridation Committee of the St. Louis Medical Society[13] contains an admirable summarizing statement with respect to the storage of fluorides in the body.

> At the levels of intake supplied in fluoridation programs, there is practically no storage of fluorine except in the teeth. The ideal daily amount is about one milligram in temperate or predominately cool climates and would be obtained by drinking one quart of water containing 1 part per million of fluoride ion. Storage elsewhere in the body has not been demonstrated with daily intakes of as much as three or four times that amount. Storage in bone apparently occurs with daily intakes substantially above 4 mg., though without demonstrable ill effect on persons who have lived all their lives with a water supply containing 8 parts per million of fluoride. A wide margin of safety is thus provided, inasmuch as intakes of fluorine about fifty per cent above the ideal dose produce very mild evidences in the appearance of the teeth of such excess. These dental warnings are detectable only by expert examination and are in no way harmful to the teeth. There is no published record of any injury to the health of any person drinking natural fluoridated water with a concentration as high as 8 parts per million, nor of harmful effects at such lesser concentrations as occur naturally or are provided in fluoridation programs. No injurious effects can be found in the study of vital statistics of all the common major diseases, including cancer, or in the statistics of maternal and newborn death rates. Experimental studies on man (the most sensitive species) and lower animals confirm these evidences of the safety of a fluoridation program.

The report of the United Kingdom Mission[14] presents a somewhat similar statement that was arrived at after the Commission had spent three months in this country studying all phases of the problem:

> Research into the toxicology of fluorine compounds has been continuous, and the possibility that continued low-level consumption of fluoride might eventually cause undesirable effects has been recognized for many years. This research and awareness has been stimulated by keen scientific and public interest and by not a little controversy. Yet, no definite evidence has been forthcoming that the continued consumption of fluorides at a level of about 1 ppm is in any way harmful to health. This is an impressive fact and one which, in our opinion, makes it quite certain that if any untoward effect is revealed by future research it will be of a relatively trivial order. However, the opinion held by a minority of American scientists that fluoridation policies should not be actively pursued until further research into possible hazards has been undertaken, may be noted. It has been said that fluoridation involves a degree of "calculated risk." The authorities and communities concerned must decide for themselves what degree of risk is worth accepting. We do not wish to take sides in this matter of opinion, but merely to assert the fact that no risk is at present known to exist. If a risk exists at all, it is so inconspicuous that it has not been revealed by many years of investigation. Millions of people are living in ordinary good health on water containing fluoride in the amounts recommended for caries control (or more), so that the fluoridation of other waters involves no new experience in human welfare.

It seems well to conclude the arguments on this point with two other brief but highly significant statements.

Regarding the cancer charge, the president of the American Cancer Society, Dr. Charles S. Cameron, recently declared:

> The American Cancer Society does not consider fluorine or the common fluorine salts to be carcinogenic. Its position, therefore, with respect to water fluoridation for the purpose of dental caries prophylaxis, is that such treatment of public water supplies is without danger so far as cancer causation is concerned.

In December of 1953 the El Paso

13. Water fluoridation, report of the committee of the St. Louis Medication Society summary. Missouri Med. 51:124 Feb. 1954.

14. Report of the United Kingdom Mission. Fluoridation of domestic water supplies in North America as a means of controlling dental caries. London, Her Majesty's Stationery Office, 1953.

County (Colorado Springs, Colo.) Medical Society unanimously adopted the following resolution:

> Whereas, there is substantial evidence that the water supply of Colorado Springs has contained a surplus amount (2.6 parts per million) of fluoride for a period of about 75 years;
>
> Be It Resolved, that during the long practice of medicine in Colorado Springs, it is the considered opinion of the members of the El Paso County Medical Society that we have not experienced any clinical symptoms which can be attributed to the use of such water . . .

Natural Fluorides Versus Artificial Fluorides • The terms "natural fluorides" and "artificial fluorides" should never be used since there are no physical or chemical differences of any kind between fluorides naturally present in the water and fluorides being added in any of the forms presently being used in this country. The evidence for that statement is as follows:

1. Most salts, including the salts of fluorine which occur in water or which are added to water for the reduction of caries, dissociate into positively and negatively charged ions. The salts themselves are, therefore, not present in the water but only the ions resulting from their dissociation. In the case of fluorides naturally present in water and in the case of fluorides added to water, these ions are identical, and it is not logical to suppose that the same ions in water would produce different effects depending on whether they were naturally present or have been added.

2. The chemical methods for determining fluorides in water work equally well in the case of fluorides already present or in the case of fluorides added to the water. As a matter of fact, there is no known method of differentiating, physically or chemically, between fluorides naturally present and fluorides added.

3. The effects of natural fluorides and added fluorides in reducing dental caries are identical for the same concentration. This has been conclusively shown by comparison of the Grand Rapids and Newburgh data with data from the same age groups at Aurora, Ill., where fluorides are naturally present. The same conclusions have been reached in numerous other studies conducted throughout the country.

Fluoridation Is Wasteful Since It Benefits Few People • It is true that people drink only about a half gallon of water per day of an average of 140 gallons produced per person per day. It should be remembered, however, that the water consumed for drinking, cooking, laundry, dish washing, and bathing for each member of the average family is less than 10 gallons per day. In spite of this low percentage of water consumption required to meet all domestic requirements, hundreds of municipal water supplies are softened or treated for the removal of color, taste, odor, and are sterilized with chlorine at treatment costs many times greater than the cost of fluoridation. Yet these treatment processes are likewise required for only that small percentage of water used for direct human needs. Furthermore, in the last 50 years these improvements in the quality of public water supplies have saved the lives of at least five million persons who would have died of water-borne diseases if the water supply industry had not kept in step with the advances in scientific knowledge. In 1900 more than 50 persons per 100,000 living died each year from typhoid fever alone in the United States. Today in this country less than 1 person per 200,000 living dies of typhoid.

Lastly, the cost of fluoridation is extremely small. At present prices, it ranges from $1.40 to $3.20 per million gallons. To the local consumer it is much more meaningful to say that the total amortized cost of fluoridation which includes the cost of the chemicals, of the feeding

equipment, and additional labor required, varies between 5 and 20 cents per person per year. The saving which will result for every American family in lowered dental bills will amount to hundreds of times that family's proportionate cost of fluoridation. The water works industry has therefore expressed its willingness that water be used as the vehicle for providing children with the optimum daily requirement of fluoride, and its willingness to implement the program when it comes as the result of public demand and has the approval of the local medical and dental societies and the local and state health authorities responsible for the communal health.

Overdosage of Fluorides Would Be Possible, With Dangerous Consequences • There are a number of chemical feeders on the market capable of meeting all requirements for feeding the chemicals used in fluoridation. As a matter of fact, water works operators have for many years been feeding other water treatment chemicals with the uniformity of feeding and accuracy which will be required of fluoridation. The danger of significant overdosage simply does not exist. Eighteen and eight tenths pounds of 98 per cent sodium fluoride is added to each million gallons of water to provide a dosage of 1 ppm of the fluoride ion. In order to produce among water consumers the first mild symptoms of toxic fluorosis, there would need to be added to each million gallons of water 4,600 pounds or 2.3 tons of sodium fluoride or its equivalent. For each consumer to receive a lethal dose of sodium fluoride, there would need to be added to each million gallons of water 80,000 pounds or 40 tons of the chemical.

Fluorides Produce Tastes in Water and Render It Corrosive • In the concentration of 1.0 ppm employed in fluoridation, none of the chemicals has any effect on the taste of the water, nor do they render it corrosive.

The Delaney Committee Report[15] • The Delaney Committee was a House Select Committee to Investigate the Use of Chemicals in Foods and Cosmetics of the 82nd Congress. It held hearings in New York City and Washington in January, February and March of 1952. Toward the end of its hearings it received testimony for and against fluoridation. The Committee made no attempt to check the professional competence of witnesses to testify in a scientific inquiry and, as a result, a great deal of irrelevant and incompetent material was introduced. At the conclusion of its hearings, the Committee described fluoridation as a "calculated risk." It is important to remember that this observation represents only the personal opinion of a majority of a small Congressional committee and has no official standing or meaning, and remember also that it has been completely refuted by the great mass of contrary evidence. It is significant to note that the City of Washington, D. C. adopted and began the practice of fluoridation after the Delaney Committee hearings had been concluded.

COMMENT

Space does not permit consideration of all of the arguments which have been advanced against fluoridation. It has been characterized, for example, as a plan to make profits for the Aluminum Company of America and other large chemical companies. It has been claimed that it will produce sterility in human beings. It has been said that individual variations are such that it is not possible to state that any amount of fluoride is "safe." It has been claimed that it is an unnecessary procedure since caries can be controlled

15. Fluoridation of water. Hearings before the Committee on Interstate and Foreign Commerce. House of Representatives, Eighty-third Congress, Second Session, on HR 2341 A bill to protect the public health from the dangers of fluoridation of water, May 25-27, 1954. Washington, D.C., Government Printing Office, 1954.

by reducing the amount of sugar and carbohydrates in the diet of children. The answers to all of these questions, and many others, may be found in the references which have been cited, to the list of which must be added the excellent "Fluoridation Kit" of the American Dental Association. Finally, it should be said again that "this reduction in the incidence of dental caries gives promise of being one of the landmarks in the history of public health, not only in this generation but in this century."

544 N. E. Tenth Avenue

Physiology of human dental occlusion

Bernard Jankelson, D.M.D., Seattle

The problem of dental occlusion pervades every phase and every specialty of dentistry. Disturbances of occlusion have been recognized clinically and reported as a primary or contributory cause of various disturbing clinical phenomena[1-4] such as loosening of the teeth in both natural and artificial dentition,[5] pulp disease and hypersensitivity.[6] Though the role of these occlusal disturbances as a primary etiological factor in periodontal disease may be conjectural,[7, 8] their importance as at least a potential and aggravating factor is generally conceded.[9]

The predominant theory of occlusion at the present time, based on an assumption advanced about 1850 by Bonwill,[10] holds that during function teeth move against each other in a characteristic pattern; that for optimum function, occlusion of the teeth must be synchronized with the sliding movements of the condyles in the temporomandibular joints. Shortcomings in the application of the theory and disappointments in clinical results have not led to questioning of the basic premise to any extent, but rather to intensified efforts to further refine the procedure.[11-15] These efforts have re-

Lecturer and clinical associate, University of Washington.

1. Miller, S. C. Textbook of periodontia, ed. 3, Philadelphia, Blakiston Co., 1950, p. 350.

2. Merritt, A. H. Traumatic occlusion—cause or effect in periodontal diseases. New York D. J. 15:507 Nov. 1949.

3. Gottlieb, B. Traumatic occlusion. J.A.D.A. 14:1276, July 1927.

4. Orban, B. Tissue changes in traumatic occlusion. J.A.D.A. 15:2090 Nov. 1928.

5. Swenson, Merrill G. Complete dentures, ed. 2. St. Louis, C. V. Mosby Co., 1947, p. 214.

6. McCall, J. O. Traumatic occlusion. J.A.D.A. 26: 519 April 1939.

7. Gottlieb, B., and Orban, B. Tissue changes in experimental traumatic occlusion with special reference to age and constitution. (Abst.) J. D. Res. 11:505 June 1931.

8. MacMillan, Hugh W. The case against traumatic occlusion. J.A.D.A. 17:1996 Nov. 1930.

9. Glickman, Irving. Clinical periodontology. Philadelphia, W. B. Saunders Co., 1953, p. 382-383.

10. Washburn, H. B. History and evolution of the study of occlusion. D. Cosmos 67:223 March 1925.

11. Gysi, A. Some reasons for the necessity of using adaptable articulators. D. Digest 37:219 April 1931.

12. Hanau, R. L. Dental engineering. The share of the condyle paths in the performance of mastication and the importance of their correct reproduction in articulator mechanism. D. Digest 28:2 Jan. 1922.

13. House, M. M. Studies in prosthesis (mandibular movements; articulators). J.A.D.A. 18:827 May 1931.

14. Stansbery, C. J. Functional position checkbite technic. J.A.D.A. 16:421 March 1929.

15. McCollum, B. B. Oral diagnosis. J.A.D.A. 30: 1218 Aug. 1943.

sulted in a progressively more complicated and exacting armamentarium.

The basic assumption that the mandibular teeth move in contact with the maxillary teeth in various eccentric positions during incision and mastication was advanced over a century ago. It has governed the direction and the character of research on the problem of occlusion to this day. In evaluating the validity of this and companion assumptions, it should be borne in mind that despite their widespread acceptance, the literature on occlusion reveals no basis of controlled experimental evidence to support these assumptions at the time that they were adopted, nor has such supporting evidence appeared subsequently in the literature. On the contrary, experimental evidence provided by recent physiological research indicates strongly that the assumption has little basis in fact.

Although the highly developed procedures and armamentaria in use today represent the fruits of a century of devoted and intensive effort, there is still considerable lack of agreement as to their value. Nor is this difference of opinion resolved by a search of the literature which again reveals no record of controlled studies evaluating the results. Until such evidence is obtained, evaluation of the benefits to be derived from these procedures is debatable.

As with most scientific problems, real understanding is difficult until the underlying facts are known. The problem of occlusion is a problem of physiology. Until quite recently, however, the area involved in occlusion has been physiologically unexplored. Without a basis for understanding, it is not surprising that the problem of occlusion was marked by confusion. Research in stomatognathic physiology has resulted in observations which, while seeming to make prevailing concepts untenable, may also provide a new basis for an understanding of dental occlusion. This investigation is concerned with the exploration of that possibility.

PURPOSE AND SCOPE OF INVESTIGATION

The purpose of the investigation was twofold: first, by the application of this new evidence, to attempt to establish criteria for an occlusion that satisfies physiological requirements; and second, through exploring the results of their application to the problem of occlusion, either to confirm further or to question the validity of the physiological evidence itself.

Since the investigation was fundamental in nature, the application of the evidence to every known aspect of occlusion was indicated. Any incompatibility of the evidence with any factor of occlusion would tend to cast doubt on the validity of the evidence itself. Accordingly, it was considered advisable to determine whether the theory resulting from the evidence could be reconciled to the physiology, the pathology (traumatic occlusion), the histology of occluding surfaces, and to their anthropology, and whether it could cast further light on the relationship of these factors to occlusion.

METHOD

The first step in the investigation was to uncover and to analyze the considerable body of physiological data that has recently accumulated. From this analysis, criteria were established for an occlusion that fulfilled their requirements. Having postulated these criteria, the objective was to apply them to the problems of occlusion in order to determine whether they were compatible with the known aspects of occlusion, and whether their application would clarify hitherto poorly understood factors.

PHYSIOLOGICAL CRITERIA

The physiological criteria established were as follows:

1. That occlusion of a positive char-

acter, as distinguished from the light, fleeting, tactile contacts that, by nociceptive reaction, initiate the flexor reflex, occurs during deglutition and not during incision and mastication; that during deglutition the tongue, which has its origin in the mandible, engages in extremely forceful distal muscular thrusts; that consequently, occlusion of the teeth occurs in the most distal position to which it can be carried by the musculature.[16]

2. That when the opposing muscle groups of mastication are in a state of balanced tonus, there should be no occlusion of the teeth.[17-20]

3. That for maximum muscular efficiency occlusion should occur very shortly after the beginning contraction of the elevator muscles of the jaw.[19,21,22]

4. That a major function of occlusion is stabilization of the mandible against the maxilla during the forceful muscular contractions of deglutition.[16]

OCCLUSION POSTULATED FROM PHYSIOLOGICAL CRITERIA

Occlusion based on the foregoing criteria requires:

1. That occlusion occur at the most distal position to which the musculature can carry the mandible.

2. That this distal occlusion occur at a vertical position slightly superior to the rest position of the mandible.

3. That the occlusion be inherently stable at the above positions throughout the entire range of force exerted on it by the musculature during deglutition; that is, no force should be generated within the occlusion itself that would tend to cause displacement in any horizontal direction.

Omission of the customary provision for eccentric balanced occlusion requires explanation. Despite the long-held belief that this provision is desirable,[5] no experimental physiological evidence was found to support the contention. On the contrary, it was experimentally established and reported[16,23] that no significant functional occlusion of the teeth occurred during incision and mastication—there was food between the teeth at all times during these acts. These observations did not, as might seem at first glance, minimize the important role of the teeth in chewing the food that was between them; the findings imply that, while chewing the food that was between them, the teeth did not occlude and chew each other.

MOVEMENT AND WEAR

Because function of teeth involves movement and friction of tooth against tooth and of food against tooth, progressive change of the dental surfaces involved, due to wear, is inevitable; a constantly changing occlusion is an inescapable accompaniment of surface wear (Table 1).

The phenomenon of wear has been recognized and reported,[24-28] and the manner of its occurrence, the frictions, structures and substances involved con-

16. Jankelson, B.; Hoffman, G. M., and Hendron, J. A., Jr. Physiology of the stomatognathic system. J.A.D.A. 46:375 April 1953.

17. Niswonger, M. E. Rest position of the mandible and centric relation. J.A.D.A. 21:1572 Sept. 1934.

18. Gillis, R. R. Establishing vertical dimension in full denture construction. J.A.D.A. 28:430 March 1941.

19. Thompson, J. R. Rest position of the mandible and its significance to dental science. J.A.D.A. 33:151 Feb. 1946.

20. Schuyler, C. W.; Jordan, L. G., and Sears, V. H. Report of the committee on principles, practices and nomenclature (Acad. Den. Prosthetics). J. Pros. Den. 3:595 Sept. 1953.

21. Boos, R. H. Intermaxillary relation established by biting power. J.A.D.A. 27:1192 Aug. 1940.

22. Emig, George E. The physiology of the muscles of mastication. J. Pros. Den. 1:700 Nov. 1951.

23. Brudevold, Finn. Basic study of the chewing forces of the denture wearer. J.A.D.A. 43:45 July 1951.

24. Davenport, Isaac B. The significance of the natural form and arrangement of the dental arches of man, with a consideration of the changes which occur as a result of their artificial derangement by filing or by the extraction of teeth. D. Cosmos 29:413 July 1887.

25. Jones, Hector E. The primary dentition in homosapiens and the search for primitive features. Am. J. Phys. Anthropol. 5:251 Sept. 1947.

26. Box, H. K. Twelve periodontal studies, Toronto, University of Toronto Press, 1940, p. 43-44.

27. Moses, C. H. Studies in articulation. J. Pros. Den. 2:326 May 1952.

28. Pleasure, M. A., and Friedman, S. W. Practical full denture occlusion. J.A.D.A. 25:1606 Oct. 1938.

Table 1 • Development of wear and its effect on human dental occlusion

Occurrence	Predominant movement	Frictional surfaces	Resultant wear	Resulting aberration of tooth form and position	Resultant force	Effect on occlusion
1. Bruxism	Horizontal	Tooth against tooth	Shortens, flattens, widens	A. Loss of vertical—closed bite—mandibular arch jammed anteriorly into maxillary arch	A. Produces buccal and labial (outward) thrust on maxillary teeth during occlusion	A. Unstabilizing
				B. Mandibular buccal surfaces and maxillary lingual surfaces (which originally fit opposing occlusal inclined surfaces) now too wide to allow complete entry of cusps into occlusal surfaces	B. Same as above	B. Unstabilizing
				C. Occlusal surfaces wider, but failed to widen at same rate as B, resulting in occlusion of surfaces with dissimilar angles	C. Same as above	C. Unstabilizing
2. Mastication	Vertical	Food against tooth	Narrows	A. Narrows mandibular buccal surfaces and maxillary lingual surfaces, offsetting widening of bruxism	A. Decreases buccal and labial (outward) thrust	A. Stabilizing
				B. Widens occlusal surfaces, but maintains a steep angulation	B. Same as above	B. Stabilizing
3. Deglutition	Vertical	Tooth against tooth Food against tooth	Insignificant (No movement after contact if cusp entry is unimpeded)	A. Insignificant reduction of surfaces that occlude—(characterized by vertical facets)	A. Decreases buccal and labial thrust on maxillary teeth (effect insignificant)	A. Stabilizing (insignificant)
				B. Insignificant "closed bite"	B. Produces buccal and labial (outward) thrust on maxillary teeth (effect insignificant)	B. Unstabilizing (insignificant)

sidered in a general way. These factors, however, needed to be more specifically identified and their respective roles understood to the extent that the observed phenomena of wear might be logically determinable.

If the direction of movement of a part and the functional conditions under which it operates are known, the pattern of wear may be predicted with considerable certainty. The direction of mandibular movements and the conditions under which it occurs are described in reports of physiological research. It was decided that these physiological observations should be used to learn the manner of development and the pattern of physiological wear of the teeth. The scope of the investigation was later expanded to include investigation of aberrations of form resulting from physiological wear.

Method and Scope • For the purpose of this investigation, these reported movements were classified first according to their direction and second according to the conditions under which they occurred. The wide scope of this report and the physical limitations of space necessitate that the following description of movement be general in nature, and that only those aspects which are pertinent and sufficient for a broad understanding of their effect in the development of wear are emphasized. Although the movements were investigated in all three dimensions, it was found that the view from the lateral and superior aspects did not significantly affect or alter the import of movement as viewed from the anterior aspect alone. This report, therefore, is largely confined to consideration of the effect of movement as seen primarily from the anterior aspect, and many details are omitted for reasons of clarity and convenience.

Acts Involving Wear • Three distinct acts during which movements of the mandible involving wear occur are reported in the literature—bruxism, mastication, deglutition. From the nature of the movement and the frictional substances involved in each, it was not difficult to deduce their respective roles in the production of wear of the teeth.

Bruxism • Predominantly horizontal movements occurring while the teeth are in contact (Table 1 and Fig. 1) have been variously designated as the "functional movements of the mandible," the "glide," "bruxism," and more recently as "nonmasticatory grinding." Though they are commonly regarded as part of the terminal stroke of mastication, this idea is negated by the observation that contact of the teeth during mastication was absent or negligible.[16]

These gnashing and grinding movements, considered as a major characteristic of the phenomenon of bruxism,[29] have been regarded as pathogenic. At the beginning of this investigation, their occurrence was regarded as well established, but their purpose was obscure. Considerable light was thrown on this aspect, however, as the general investigation progressed.

Applying the known data regarding these movements to determine their role in wear of the teeth, it may be deduced that:

1. Wear would occur predominantly in a horizontal direction across the tips of the cusps and the occlusal surfaces, thus shortening the cusps and making the sulci more shallow.

2. The wear caused by tooth surface moving against tooth surface would be limited to the areas of tooth contact and would exhibit clear-cut facets on the buccal surfaces of the mandibular teeth and the lingual surfaces of the maxillary teeth, as well as on the occlusal surface.

29. Report from 1949 Nomenclature Committee of the American Academy of Periodontology. J. Periodont. 21:40 Jan. 1950.

Because the movement causing the wear was predominantly horizontal, the facets would be more horizontal than the surfaces on which they occur.

Mastication • The chewing stroke differs from the gliding or grinding movements of bruxism. These predominantly horizontal grinding movements occurred only when the teeth were in contact. In contrast, the chewing stroke moves in a predominantly vertical direction (Table 1 and Fig. 1). The down stroke of the cycle travels outwardly; the upstroke travels inwardly. In a recent investigation[16] it was reported that the stroke ends short of tooth contact, food still remaining between the teeth at the termination of the stroke. Applying these observations to the problem of wear, it may be deduced that since the teeth do not contact each other during incision and mastication, wear as the result of occlusion of teeth does not occur during this act. Since the food that was being incised or chewed between the teeth was in contact with their moving surfaces, however, abrasion would occur as a result of the friction generated by the movement of the teeth into the food. Thus it became apparent that the occurrence and the amount of abrasion of the teeth during incision and mastication depended on the abrasiveness of the food being incised or chewed. The foregoing postulated the occurrence, during incision and mastication, of a type of wear with the following characteristics:

1. Wear would be located along the sides of those tooth surfaces involved in the frictional contact of the food between them during the upward stroke. Because the wear occurred during movements that were predominantly vertical, it would result in narrowing the tooth parts that were affected.

2. The wear would be smooth and generalized along an entire surface, since it was generated by the friction of the food — a flowing semihydraulic mass

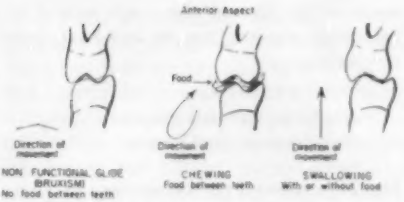


Fig. 1 • Direction of various mandibular movements and resultant attrition

sweeping over the tooth surface. This wear would be imperceptible, especially in the earlier stages, in contradistinction to wear evidenced by clear-cut facets.

Deglutition • Closure into distal (centric) occlusion occurs preliminary to and during deglutition approximately 1,500 times every 24 hours.[30] From the anterior aspect it is a predominantly vertical movement (Table 1 and Fig. 1). From the lateral aspect the movement, known as the "hinge movement," is essentially arcuate in an anterior and superior direction. When no food was between the teeth, only the tooth to tooth contact was involved. Although it has been reported that food was sometimes between the teeth during the initial swallow that followed mastication,[16] its effect as a factor of wear would be slight in relation to the frequency of deglutition. Hence it may be deduced that:

1. Wear would occur at the occluding tips of the cusps if full progress into centric were unimpeded, thus shortening the mandibular buccal cusps and the maxillary lingual cusps; if closure were impeded, wear would occur vertically against the obstruction.

2. Because of the absence of horizontal movement at or after contact, this

30. Armstrong, H. G., and Heim, J. W. Effect of flight on the middle ear. J.A.M.A. 109:417 Aug. 7, 1937.

wear of the tips of the cusps would be relatively minor in extent and have little significance.

SURFACES OF THE TEETH INVOLVED IN OCCLUSION

Having explored the occurrence and nature of wear, the specific tooth surfaces involved remained to be established. It has been commonly assumed that occlusion involves only the occlusal surfaces of the teeth. That this is an incomplete concept and should be broadened is apparent from simple visual examination of a cross section of the maxillary and mandibular teeth in contact (Fig. 2).

The occlusion of occlusal surface with occlusal surface is only a relatively minor part of the contact involved. The evident participation in occlusion of the superior part of the vestibular surfaces of the mandibular teeth and the inferior part of the lingual surfaces of the maxillary teeth has been largely overlooked. The lack of general awareness of the substantial role played by these surfaces may be explainable as stemming from the unfortunate semantics of dental nomenclature. The names given the surfaces of the teeth lack a common classification basis. The "buccal" and "lingual" surfaces are named according to the adjacent anatomic structures; the "mesial" and "distal" surfaces are named according to the direction in which they face; and the "occlusal" surfaces are named according to function.[31] It is not surprising that by inference the "occlusal" surfaces are commonly assumed to be the surfaces that occlude, to the exclusion of other surfaces not so named. The term "occlusal surface," to be accurately applied, must include a considerable part of the vestibular surfaces of the mandibular teeth and of the lingual surfaces of the maxillary teeth. The great importance of these vestibular and lingual surfaces in every phase of the problem of occlusion became more apparent as the investigation proceeded.

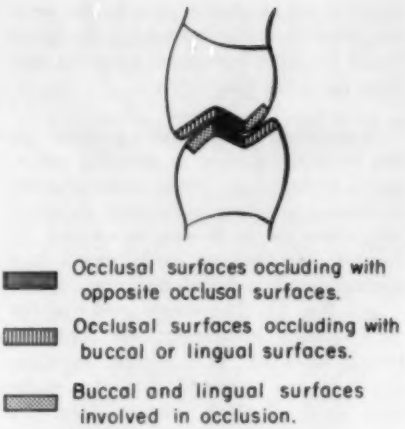

Occlusal surfaces occluding with opposite occlusal surfaces.
Occlusal surfaces occluding with buccal or lingual surfaces.
Buccal and lingual surfaces involved in occlusion.

Fig. 2 • Surfaces involved in occlusion

(Because the term "occlusal surface" is in common use to designate the superior surface of the mandibular posterior teeth and the inferior surface of the maxillary posterior teeth, it will still be used so in this report.)

PHENOMENA GOVERNING OCCLUSION

Having postulated the occurrence and manner of wear and the surfaces of the teeth involved, the alteration of occlusal form remained to be explained. This alteration of form can best be understood by considering the coordinated physiological phenomena which affect the constantly changing pattern of occlusion. Individually and conjointly these phenomena dictate the fate of the occlusion for better or for worse. Because full weight has not been given to their significance as interrelated phenomena,

31. Wheeler, Russell C. Textbook of dental anatomy and physiology, ed. 2. Philadelphia, W. B. Saunders Co., 1950, p. 9, 58.

they have not acquired a nomenclature. Descriptive names of Greek derivation as is customary in the biological sciences are suggested:

1. The phenomenon of disproportionate widening ([odont]eurysis)
2. The phenomenon of masticatory narrowing ([odonto]stenosis)
3. The phenomenon of mandibular advance ([gnatho]prochoresis)
4. The phenomenon of continuous eruption ([odonto]synechophosis)

Phenomenon of Disproportionate Widening ([Odont]eurysis) • The buccolingual width of the tooth is least at its occlusal or incisal surface and widens considerably toward the gingival. The pronounced curvatures of the vestibular and lingual surfaces of the teeth provide necessary protection for the underlying periodontium[31] and at the same time they are responsible for the disproportionate increase of the occlusal buccolingual width that accompanies horizontal wear. As the tooth wears shorter toward the ever-widening gingival area, the occlusal width increases and, because the bulges of the buccal and lingual surfaces are so pronounced, a small amount of horizontal wear may produce several times as great an increase in occlusal width.

As a result, surfaces that originally entered the opposing sulci fully without restraint no longer do so. Because of the increased occlusal width, the mandibular buccal and the maxillary lingual surfaces jam and squeeze against the slope of the opposing sulci as they enter, thus creating lateral stresses as closure continues. Disproportionate widening of the occlusal surface proved to be one of the most important and critical single factors underlying the problem of dental wear; when not offset fully by masticatory narrowing, it is a major element of the syndrome of traumatic occlusion of wear (Fig. 3 and Table 2).

A simple method was adopted for investigating and recording the change in dimension of occluding areas as a result of horizontal or nonfunctional wear. By marking a line over the tips of the cusps, then marking another line slightly inferiorly on the buccal surface of the mandibular teeth and superiorly on the lingual surfaces of the maxillary teeth, the proportionate widening in relation to shortening was measured and photographed (Fig. 3).

Phenomenon of Masticatory Narrowing ([Odonto]stenosis) • Observation of the worn teeth of primitive persons who presumably subsisted to greater or lesser extent on abrasive foods confirms the occurrence of the narrowing effect of such mastication. The phenomenon of narrowing of affected surfaces was reasonably established by a comparison of the occlusal width in these worn teeth of primitives with the occlusal width of worn teeth of persons who had eaten

Fig. 3 • Phenomenon of disproportionate widening

the modern soft diet. Furthermore, the primitive teeth showed the smooth sweeping type of wear along the sides of the mandibular labial and buccal surfaces and the maxillary lingual surfaces to be expected from food abrasion.

Masticatory narrowing would appear to be a necessary compensatory phenomenon to prevent the development of increased occlusal width of the teeth and to minimize the traumatogenic effect of mandibular advance. The diet of modern man is soft and nonabrasive, hence adequate masticatory narrowing is seldom seen in modern urban man. It is not surprising that traumatic occlusion is the common fate of the present day dentition.

Phenomenon of Mandibular Advance ([Gnatho]prochoresis) • As the teeth decrease in height because of horizontal wear, the mandible, closing into centric position, must travel further before occlusion is reached.[31-33] Because of the arcuate direction of the closing movement (commonly characterized as hinge closure), the mandible not only moves further upward; it simultaneously moves forward as well. Then, since the dental arches are narrower anteriorly, the vestibular surfaces of the mandibular teeth occlude into a narrower portion of the maxillary arch, wedging laterally against the buccal inclined planes of the maxillary sulci (Fig. 4). The effects of this phenomenon added to the effect of the phenomenon of disproportionate widening characterizes the syndrome of the traumatic occlusion of wear (Table 2).

Phenomenon of Continuous Eruption ([Odonto]synechophosis) • This phenomenon has been recognized histologically and from the standpoint of its clinical significance as a compensatory mechanism to counteract the effects of wear.[34-37] Orban summarized the phenomenon as follows: "Movements of eruption begin at the time of root formation and continue throughout the life span of a tooth."[34] It is a common clinical observation that the degree of erup-

32. Gottlieb, B., and Orban, B., Biology of investing structures of the teeth. In Dental science and dental art, Gordon, S. B., editor. Philadelphia, Lea & Febiger, 1938, p. 146-147.

33. Stallard, H. Anterior component of the force of mastication and its significance to the dental apparatus. D. Cosmos 65:457 May 1923.

34. Orban, B. Oral histology and embryology, ed. 2. St. Louis, C. V. Mosby Co., 1949, p. 289.

35. Brodie, Allan G. On the growth of the jaws and eruption of the teeth. Angle Orthodont. 12:109 July 1942.

36. Hellman, Milo. The face and teeth of man. (A study of growth and position). J.D.Res. 9:179 April 1929.

37. Schweitzer, J. M. Oral rehabilitation. St. Louis, C. V. Mosby Co., 1951, p. 605.

Table 2 • Phenomena involved in stable physiological occlusion and in traumatic occlusion

Stable physiological occlusion				
Phenomenon of disproportionate widening ([odont] eurysis)		Phenomenon of masticatory narrowing ([odonto] stenosis)	→	Stable occlusion
	plus			
Phenomenon of mandibular advance ([gnatho] prochoresis)		Phenomenon of continuous eruption ([odonto] synechophosis)	→	
Syndrome of traumatic occlusion				
Phenomenon of disproportionate widening ([odont] eurysis)		Phenomenon of masticatory narrowing ([odonto] stenosis)	→	Traumatic occlusion
	minus			
Phenomenon of mandibular advance ([gnatho] prochoresis)		Phenomenon of continuous eruption ([odonto] synechophosis)	→	

tion is attuned to the forces of occlusion. That there is normally an excess potential, held in check by occlusion, seems apparent. The tooth freed from occlusion with its opponent erupts at an accelerated rate. The phenomenon of continuous eruption, by offsetting the loss of height of teeth due to wear, prevents or minimizes the phenomenon of mandibular advance with its attendant wedging of the mandible anteriorly into the maxilla.

INTERRELATION OF PHENOMENA OF OCCLUSION

Most simply stated, the simultaneous coordinated operation of all four phenomena is necessary for the maintenance of physiological occlusion.

Two of the phenomena, the phenomenon of disproportionate widening and the phenomenon of mandibular advance, are traumatogenic, and when inadequately compensated, comprise the syndrome of traumatic occlusion of wear (Table 2).

The other two phenomena, the phenomenon of masticatory narrowing and the phenomenon of continuous eruption, if adequate in extent, compensate for the occurrence of the first two phenomena, thus preventing the development of the syndrome of traumatic occlusion and maintaining stable physiological occlusion (Table 2).

NATURE OF PHYSIOLOGICAL OCCLUSION

The nature of a stable physiological occlusion was clarified by consideration of the causes of instability (Table 2 and Fig. 5). The following method was used:

A dark, thin (32 gauge) wax, adhesive on one side, was applied over the mandibular teeth of a subject with symptoms of traumatic occlusion. The subject closed lightly into distal (centric) occlusion. Transparent areas in the dark wax were visual evidence of approaching contact (Fig. 6). The comparative imminence of various contacts could be seen by the variation of transparency. The procedure was repeated on the maxillary teeth.

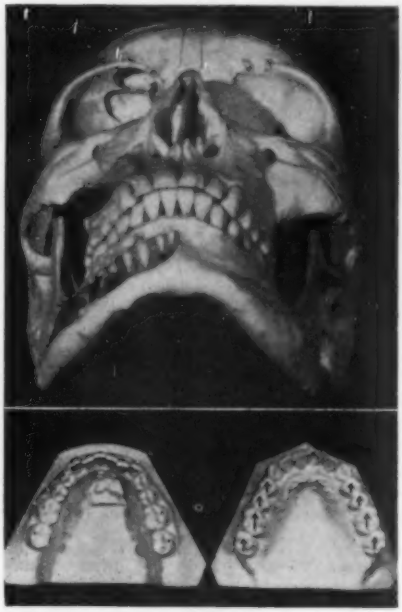


Fig. 4 • Above: Skull showing anterior convergence of dental arch. Below: Models showing direction of mandibular advance and resultant wedging

The unstabilizing areas of the occlusion are apparent. The transparent areas on the mandibular vestibular surfaces show the full force of the combined effects of disproportionate widening and mandibular advance, and occur most frequently. The areas on the maxillary lingual surfaces, resulting from disproportionate widening alone, appear next in frequency. It is apparent that these widened surfaces, squeezing and jamming laterally against opposing slopes, disturb the stability of the occlusion. Simple reduction of the widened areas, as

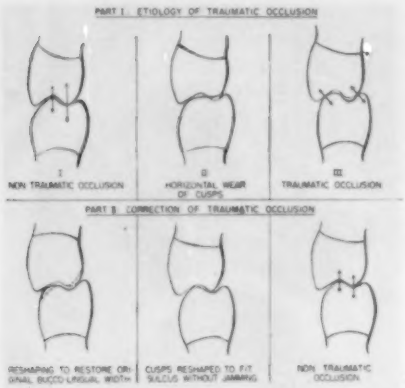


Fig. 5 • Etiology and correction of traumatic occlusion

described later, resulted in demonstrably stable occlusion.

From the foregoing, the inherent nature of a stable occlusion became apparent. It is not enough that occlusion occur in the proper position. The simple inherent characteristic of a stable physiological occlusion is the absence of squeezing, wedging or lateral jamming against individual teeth or against the arch as a whole during closure into occlusion. The occlusion must be steadfast and firm at the first light contact. It must remain steadfast and firm, generating no lateral unstabilizing stresses within itself, throughout the entire range of muscular power applied by the elevator muscles during deglutition.

TRAUMATIC OCCLUSION

It should be noted that, despite the common impression that a tooth or teeth are "too high" or "hitting heavy" in a vertical sense, the actual traumatogenic factor is the excess width of the occluding vestibular and lingual surfaces. To the individual, the widened surface, contacting the opposing slope of the occlusal surface and obstructing further entry, feels high; to the dentist preoccupied exclusively with the occlusal surfaces, the carbon mark on those surfaces appears as a high spot. The carbon mark on the occlusal surfaces, however, was made by the pressure of the widened mandibular vestibular or maxillary lingual surface. After the specific widened area is narrowed, the occlusal surface no longer feels high, nor is a carbon mark now produced to make it look high.

That continuous eruption is attuned to occlusion has been noted previously. The significance of this flexibility of response, as a biological mechanism to maintain even vertical contact of the teeth, should not be overlooked. Any hypererruption of a tooth would bring it into contact with its opponents, and its eruption would then be retarded. The remaining teeth, freed from restraint, would erupt at an accelerated rate until occlusion occurred, then the rate of eruption would slow. In the light of the foregoing, it is difficult to accept the likelihood of teeth being "high" in their relation to others. After the widened surfaces that kept them from fully occluding are reduced, these teeth that felt high are demonstrably low, and eruption accelerates to bring them into occlusion.

In the traumatic occlusion of wear the teeth are restrained by the lateral jamming of mandibular labial and buccal surfaces and maxillary lingual surfaces from full entry into opposing occlusal surfaces. The relations of this restraint to the production of bruxism will be discussed.

BRUXISM

Though gnashing and grinding of the teeth is not a part of the mastication of food, it is prevalent at other times—then it is known as occlusal neurosis, bruxism and,[38] when habitual, as bruxomania.

38. Miller, S. C. Textbook of periodontia. Philadelphia, Blakiston Co., 1938, p. 510.

The phenomenon has been attributed to both psychosomatic and local factors (traumatic occlusion) and a combination of both. [6, 39-45] Bruxism as a neurotic symptom is physiologically explainable by the conflict and sustained muscular contraction which anxiety states produce. The repeated observation that under emotional stress, the skeletal musculature exhibited general and sustained hyperfunction, though "in many subjects the skeletal muscle activity was confined to the muscles of facial expression,"[46] emphasizes the susceptibility of this region to neurotic muscular contractions. The neurotic response of the muscles of mastication is evidenced by clamping and grinding movements.

That a specific neurologic syndrome of bruxism might be found was suggested by the observation that lateral wedging of the mandibular labial and buccal surfaces and the maxillary lingual surfaces restrained the teeth from full entry into the opposing occlusal surfaces. Restraint of skeletal muscles initiates struggling movements, whether the cause of the restraint is swaddling clothes, a tight collar, or tooth surfaces that do not allow free movement into full occlusion. Resistance to any movement or obstacles to action cause excitement.[47] The phenomenon is so constant that immobilization of an animal on a board is used as a routine procedure for the production of a severe alarm reaction.[48]

The application of the foregoing observations to the problem of when, why, and how the horizontal movements of bruxism occur led to the following deductions. Occlusion of the teeth, a physiological act, occurs every 60 to 70 seconds, preliminary to deglutition. If

39. Frohman, Bertrand S. Occlusal neuroses; application of psychotherapy to dental problems. Psychoanalyt. Rev. 19:297 July 1932.

40. Shanahan, T. E. J. Physiologic and neurological occlusion. J. Pros. Den. 3:631 Sept. 1953.

41. Miller, Samuel C., and Firestone, J. M. Psychosomatic factors in the etiology of periodontal disease. Am. J. Orthodont. & Oral Surg. (Oral Surg. Sect.) 33:675 Sept. 1947.

42. Gottlieb, B. Traumatic occlusion and the rest position of the mandible. J. Periodont. 18:7 Jan. 1947.

43. Tishler, B. Occlusal habit neuroses. D. Cosmos 70:690 July 1928.

44. Leof, Milton. Clamping and grinding habits; their relation to periodontal disease. J.A.D.A. 31:184 Feb. 1944.

45. Burket, Lester W. Oral medicine; diagnosis, treatment. Philadelphia, J. B. Lippincott Co., 1946, p. 362, 601, 602.

46. Life stress and bodily disease. Association for Research in Nervous and Mental Diseases. Baltimore, Williams & Wilkins Co., 1950, p. 755.

47. Guthrie, Edwin R. The psychology of human conflict. New York, Harper & Bros., 1938. p. 29.

48. Selye, Hans. Annual report on stress. Montreal, Acta Inc., 1951, p. 266.

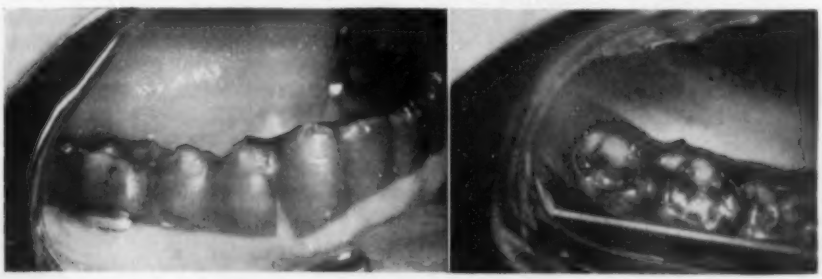


Fig. 6 • Surfaces involved in traumatic occlusion of wear. Left: Transparent areas of dark wax show extent of mandibular vestibular surfaces that wedge against opposing inclines. Note great bulk of enamel in these areas shown in Figure 7. Note wax remaining over incisal edges and cusp tips, evidencing restraint from full closure. Right: Extent of maxillary lingual surfaces that wedged against opposing inclines, unstabilizing occlusion and restraining full closure. Note great bulk of enamel in this area shown in Figure 7. (Photographed using mirror)

the mandible cannot complete that act, because of the restraint of wedging tooth surfaces, struggling movements are initiated. These movements may take two observed forms—clamping, an attempt to force the mandible through to stable occlusion despite the restraint; or grinding, an attempt to make space by wearing away the restraining surfaces. Unfortunately, the grinding movements, predominantly horizontal, not only fail of their objective, but because of disproportionate widening the offending surfaces become wider still; because of mandibular advance the labial and buccal surfaces wedge tighter; the restraint progressively increases and the gnashing and grinding become more violent.

Experimental Production of Bruxism • Bruxism was consistently and readily produced in ten human beings, of both sexes, ranging in age from 4 years to 72 years. A very thin film of acrylic cement placed on one or several contacting surfaces of the teeth and allowed to harden restrained the mandible from full closure. In all ten instances grinding movements of bruxism began immediately. They persisted until, within the hour, the restraining cement was removed.

HISTOLOGICAL INVESTIGATION

Since it is apparent that over the years the surfaces involved in occlusion undergo the inevitable wear resulting from frictional movement against each other and against food, investigation of their histologic structure was undertaken to determine whether the placement and character of the enamel had any probable relationship to the process of wear. Structural provision for function is a universal phenomenon in nature. The histological investigation explored the location, character and structure of enamel as it might be affected by wear. As in the investigations of other aspects, a major objective was to evaluate the compatibility or incompatibility of the histological facts with the other observations. These observations had made it apparent that for the maintenance of a favorable physiological occlusion, sufficient narrowing wear must occur during the chewing of abrasive food to compensate for the effect of any shortening and widening brought about by tooth-to-tooth friction. Did the histological structure make provision for this physiological requirement—that some areas be more resistant to wear, and some more susceptible?

Method • Ground sections were prepared of unworn (recently erupted) extracted teeth through the areas that are subject to wear and photomicrographs were made (Fig. 7). Variations in the thickness and the structure of the enamel were determined.

Findings • The enamel was noticeably thickest on the superior part of the buccal surfaces of the mandibular teeth, on the inferior part of the lingual surfaces of the maxillary teeth, and on the triangular ridges of the occlusal surfaces (Fig. 7). These enamel areas appeared similar in density and structure. In contrast, the enamel was thinnest on the remainder of the occlusal surface; it appeared more dense and the structure was noticeably different, the rods being twisted and irregularly arranged.

Remarks and Conclusions • The noticeably greater thickness of enamel on the mandibular vestibular surfaces and on the maxillary lingual surfaces provides bulk for masticatory narrowing. To this extent at least the histologic findings are harmonious with and confirm the physiological evidence and the subsequent deductions as to wear.

Whether, as is suggested by its appearance and as might be logically predictable because of masticatory narrowing, the enamel over these areas is actually

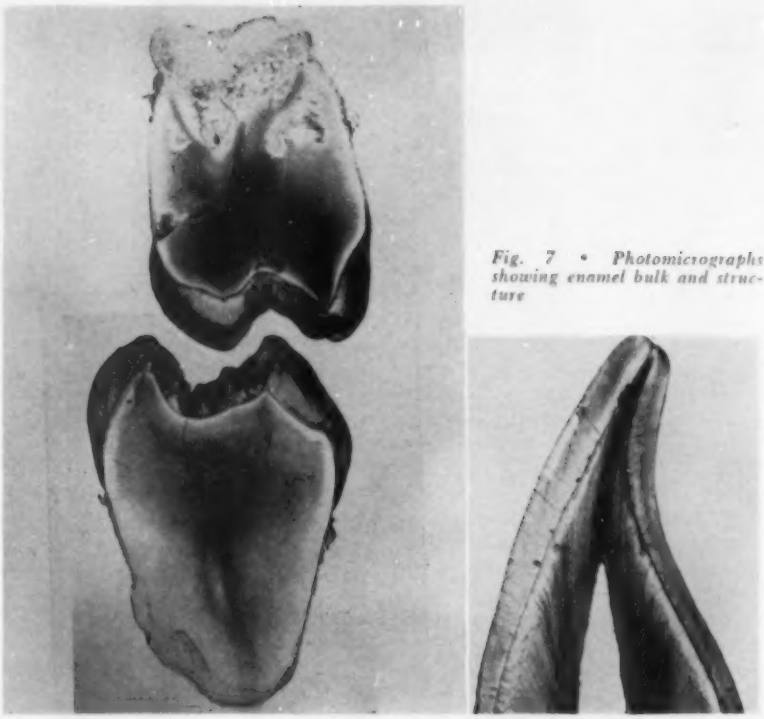


Fig. 7 • Photomicrographs showing enamel bulk and structure

less dense and more easily abraded than the irregularly arranged enamel over the occlusal surface has not been established. In view of the findings of Bernick and co-workers[49] that the content of the enamel rods was not homogeneous, or the density of the organic sheath uniform, and the observations of Phillips and Swartz[50] that the enamel varies in hardness from surface to surface of the same tooth, the possibility cannot be ignored.

The finding that the triangular ridges of the occlusal surface were composed of a great bulk of enamel with the same characteristic appearance as that on the mandibular buccal and maxillary lingual surfaces was also predictable from the physiological and consequent findings. This area must abrade readily to avoid trauma due to mandibular advance. It had been noted that models of adult dentition showed more pronounced wear of the triangular ridges than of any other part of the occlusal surfaces.

The presence on the occlusal surfaces, with the exception of the triangular ridges, of a thin layer of seemingly irregular and twisted enamel was compatible with the observation that, to avoid the undesirable sequelae of loss of vertical dimension, wear in this area must be at a minimum.

49. Bernick, Sol, and others. Electron microscopy of enamel and dentin. J.A.D.A. 45:692 Dec. 1952.

50. Swartz, M. L., and Phillips, R. W. Solubility of enamel on areas of known hardness. J. D. Res. 31:293 April 1952.

Insofar as the histological findings are harmonious with the other observations of the investigation, they tend to confirm the validity of those observations. Because much of the significance of the histological findings is speculative at this time, there is a need for further investigation, particularly of the surface hardness of specific areas of enamel.

PHYSIOLOGICAL VIEW OF ANTHROPOLOGICAL STUDIES

As previously reported,[26,27,51,52] studies have shown a pattern of wear in teeth of primitive skulls that appears compatible with maintenance of the integrity and health of the periodontal structures. These skulls had sturdy, well preserved alveolar process even in the presence of severely abraded teeth, indicating that they had experienced a desirable physiologic wear pattern, compatible with periodontal health. Reporting a study of almost 12,000 human skulls, Pleasure[28] described the characteristic occlusal pattern of worn dentition—occlusal surfaces pitched downward linguobuccally (Avery curve), except that a reversal in direction of pitch (Monson curve) often was present at the last molar.

These observations afforded an opportunity to further test the validity of our findings by determining their compatibility with these examples of actual physiological wear, and their value in providing better understanding of the nature and development of this type of physiological wear.

DEVELOPING CURVE OF PLEASURE

It was evident that the movements with which previous concepts of occlusion were concerned did not produce or explain the development of the apparently benign, physiological pattern of wear described by Pleasure and others.

By applying the recent physiological observations on which this investigation is based, however, the character and development of this wear pattern is readily explainable. Though the inevitable shortening of teeth widened the occlusal surface as observed previously, chewing of coarse abrasive foods provided a compensatory wear along the buccal surfaces of the mandibular teeth, and the lingual surfaces of the maxillary teeth, narrowing the occlusal surface, and incidentally, producing the linguobuccal downward pitch in the bicuspid and molar areas (Fig. 8). In short, masticatory narrowing was adequate. But what of the observation of Pleasure of the frequent existence of the Monson curve in the areas of the last molars?

The recent observation[53] that chewing is done mainly in the bicuspid and first molar areas provides a logical explanation. If the narrowing type of abrasion, vertically along the buccal surfaces of the mandibular and lingual of the maxillary, were produced by the friction of food, it would appear only in those areas where food was chewed. Linguobuccal downward pitch would not develop in those areas where chewing was not habitually done, and the Monson curve would persist.

Wear resulting from the mastication of abrasive foods kept the cusps from getting too wide to enter the opposing sulci without interference; in doing so it altered the occlusal arrangement to a linguobuccal downward pitch. The concept that the benign effect is attributable to the development of the pitch[27,51,52] may require some modification. Though the pitch may have some inherent advantage in directing force in a desired direction, this would appear secondary in

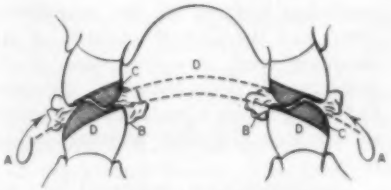
51. Pleasure, M. A. Prosthetic occlusion—a problem in mechanics. J.A.D.A. 24:1303 Aug. 1937.

52. Boswell, J. V. Practical occlusion in relation to complete dentures. J. Pros. Den. 1:307 May 1951.

53. Howell, A. H., and Brudevold, Finn. Vertical forces used during chewing of food. J. D. Res. 29:133 April 1950.

importance to the elimination of trauma through masticatory narrowing that compensated fully for the widening effect of horizontal wear.

The adequate masticatory narrowing that produced the curve of Pleasure as a coincidental phenomenon is as necessary to compensate for the almost imperceptible wear of the teeth of the average modern man as it was for the severely worn teeth of the primitives observed by Pleasure.



A. Direction of masticatory stroke.
B. Food between teeth.
C. Wear of mastication.
D. Avery curve (reverse pitch).

Fig. 8 • Development of downward pitch (Avery) by mastication

CLINICAL SIGNIFICANCE

Whether traumatic occlusion develops in the individual depends on the interplay of the four phenomena of human dental occlusion. Horizontal or shortening wear, however slight, increases the occlusal width to a much greater extent than the amount of that wear. In primitive man this widening of the cusps was equaled or surpassed by the narrowing wear that occurred during the chewing of coarse abrasive foods. Modern man, addicted to a softer diet, is not so fortunate. In the modern dentition uncompensated horizontal wear, even though minute, shortens the mandibular buccal cusps toward the wider, more bulging gingival areas; a similar fate overtakes the maxillary lingual cusps. During closure these more bulging areas, now involved in occlusion, are the first to contact the walls of the opposing sulci; they restrain the cusps from full, free, unimpeded entry. As further closing force is applied, beyond the initial stage of contact, these areas exert increasing lateral pressures.

In response to the restraint created by the widened areas that prevent full closure, muscle is excited, and struggling movements, either clamping or grinding, begin. In the intervals between deglutition, when the teeth normally would be resting from the pressures of occlusion, they are, instead, subjected to occlusal pressures greatly increased both in time and in amount. Hence eruption of the teeth, attuned to the pressures of occlusion, becomes retarded. The retardation of eruption, added to the loss of height of the cusps due to wear, results in lessened vertical dimension (closure of the bite). The mandibular arch, moving further superiorly and anteriorly before centric occlusion occurs, wedges into the narrowing part of the maxillary arch. The added restraint created by this wedging initiates further muscle excitement and struggling, perpetuating the destructive cycle.

Once understood, the problem of traumatic occlusion lends itself to expeditious, precise and effective treatment.

SUMMARY

The fundamental character of the physiological approach is confirmed by its wide fertility in clarifying the many vague aspects of occlusion.

Because function of teeth involves movement and friction, change of the surfaces involved is inevitable; a constantly changing occlusion is an inescapable accompaniment of surface wear. Three distinct acts involving movement and wear were explored, and the nature of the wear of each was postulated. When the surfaces involved in occlusion were considered, the great importance of the role of a considerable part of the

vestibular surfaces of the mandibular teeth and the lingual surfaces of the maxillary teeth in every phase of the problem of occlusion was apparent. Occlusion is not a matter of "occlusal" surface occluding with "occlusal" surface only.

The investigation uncovered four significant phenomena which govern the change of occlusal surfaces due to wear. Two of these phenomena, separately or together, characterize the syndrome of traumatic occlusion of wear. The other two are compensatory and when occurring adequately, prevent the development of traumatic occlusion.

The nature of normal and traumatic occlusion was explored. The light thrown on the basic nature of traumatic occlusion led to an exploration of the phenomenon of bruxism.

The theory of occlusion as a constantly changing condition because of wear offered a reasonable explanation for previous anthropological findings and was compatible with the histology of the teeth.

The observations suggest an approach to the problem of occlusion that is much at variance with the predominant concepts of the past century.

652 Stimson Building

Newburgh-Kingston caries-fluorine study VIII. Combined clinical and roentgenographic dental findings after eight years of fluoride experience

David B. Ast., D.D.S., M.P.H., Albany, N. Y.; Arthur Bushel,† D.D.S., M.P.H., New York; Barnet Wachs,‡ D.D.S., and Helen C. Chase,§ M.Sc., Albany, N. Y.*

The Newburgh-Kingston Caries Fluorine Study was established in 1944 to help determine whether the dental benefits observed in natural fluoride areas could be duplicated by the addition of a fluoride salt (sodium fluoride) to Newburgh's fluoride-deficient water supply. Previous publications[1-3] described the study plan and presented progress reports of clinical dental examinations up to 1952. The data indicated a continuing downward trend in dental caries among Newburgh children, age 6 to 12, while the caries rate in the comparable Kingston group remained relatively constant.

To obtain a more complete dental picture, the current series includes a full

*Director, Bureau of Dental Health, New York State Department of Health.

†Formerly, assistant director, Bureau of Dental Health, New York State Department of Health, Albany, N. Y.; at present, director, Bureau of Dentistry, New York City Department of Health.

‡Senior dentist, Bureau of Dental Health, New York State Department of Health.

§Senior biostatistician, Office of Statistical Services, New York State Department of Health.

mouth and bitewing roentgenographic examination in addition to the clinical examinations. Therefore, the data in this report cannot be compared directly to those earlier data based on clinical examinations alone.

The current series includes a limited number of schools which were chosen because of the availability of x-ray facilities. From previous data on DMF rates by school, it was determined that the selected Kingston school had a caries rate which was among the lowest in the city, while the rates for the three Newburgh schools were distributed through the range of rates for that city. This has the effect of minimizing the difference in the DMF rates between the two cities.

Based on residence histories, the Newburgh study group was limited to those who had used Newburgh water since the introduction of sodium fluoride on May 2, 1945. Since that time, the fluoride ion concentration of Newburgh's water supply has been maintained at 1.0 to 1.2 ppm, while Kingston's water supply has remained fluoride-deficient at less than 0.15 ppm. The study group in this report was further limited to children, age 6 to 10, in the first five grades in the selected schools: 382 children in Newburgh and 374 children in Kingston.

The clinical examinations, using mouth mirror and explorer, were performed by the staff senior dentist (B.W.). He also took full mouth roentgenograms including bitewing films which were processed and sent to the central office of the Dental Bureau. The films were randomized by the statistical unit so that the assistant director (A.B.) could not differentiate between a Newburgh and Kingston case when he read the films. The roentgenographic findings were charted on a new record card, and were later consolidated with the clinical observations for tabulation and analysis.

FINDINGS

Tables 1 and 2 show the dental caries experience in terms of DMF per 100 permanent teeth and DMF per 100 children for 6 to 10 year old children. The

1. Ast, David B.; Finn, Sidney B., and McCaffrey, Isabel. The Newburgh-Kingston caries fluorine study. I. Dental findings after three years of water fluoridation. Am. J. Pub. Health 40:716 June 1950.

2. Ast, David B.; Finn, Sidney B., and Chase, Helen C. The Newburgh-Kingston caries fluorine study. III. Further analysis of dental findings including the permanent and deciduous dentitions after four years of water fluoridation. J.A.D.A. 42:188 Feb. 1951.

3. Ast, David B., and Chase, Helen C. The Newburgh-Kingston caries fluorine study. IV. Dental findings after six years of water fluoridation. Oral Surg., Oral Med. & Oral Path. 6:114 Jan. 1953.

Table 1 • DMF[1] teeth per 100 erupted permanent teeth in children age 6–10, based on clinical and roentgenographic examinations, Kingston and Newburgh[2], N.Y., 1953-54

Age[3]	Number of children examined		Number of permanent teeth erupted		DMF teeth per 100 erupted permanent teeth		
	Kingston	Newburgh	Kingston	Newburgh	Kingston	Newburgh	Per cent difference
6	113	74	504	382	8.3	2.1	−74.7
7	71	94	574	802	18.6	5.9	−68.3
8	89	80	954	898	24.1	10.1	−58.1
9	59	73	783	945	30.3	10.3	−66.0
10	42	61	753	1,024	30.4	14.9	−51.0
Total	374	382	3,568	4,051	23.7	9.8	−58.6
Adj. rate[4]	...	...	...	...	23.7	9.4	−60.3

1. DMF includes teeth decayed, missing (lost subsequent to eruption), or filled.
2. Sodium fluoride added to water supply beginning May 2, 1945.
3. Age (last birthday) at time of examination.
4. Adjusted to permanent tooth population in Kingston 1953-54 examination.

Table 2 • DMF[1] teeth per 100 children age 6–10, based on clinical and roentgenographic examinations, Kingston and Newburgh[2], N.Y., 1953-54

Age[3]	Number of children with permanent teeth		Number of DMF teeth		DMF teeth per 100 children with permanent teeth		
	Kingston	Newburgh	Kingston	Newburgh	Kingston	Newburgh	Per cent difference
6	93	63	42	8	45.2	12.7	−71.9
7	69	94	107	47	155.1	50.0	−67.8
8	89	80	230	91	258.4	113.8	−56.0
9	59	73	237	97	401.7	132.9	−66.9
10	42	61	229	153	545.2	250.8	−54.0
Total	352	371	845	396	240.1	106.7	−55.6
Adj. rate[4]	...	...	...	...	240.1	94.1	−60.8

1. DMF includes teeth decayed, missing (lost subsequent to eruption), or filled.
2. Sodium fluoride added to water supply beginning May 2, 1945.
3. Age (last birthday) at time of examination.
4. Adjusted to age distribution of children examined in Kingston who had permanent teeth.

DMF experience of the Newburgh children is 60 per cent less than that of the Kingston children, ranging from over 70 per cent at age 6 to around 50 per cent at age 10.

It is well established that, among children, the permanent teeth most susceptible to decay are the first molars. An analysis of the condition of these teeth is therefore of special interest. Accordingly, Table 3 illustrates the differences in DMF first permanent molars by age.

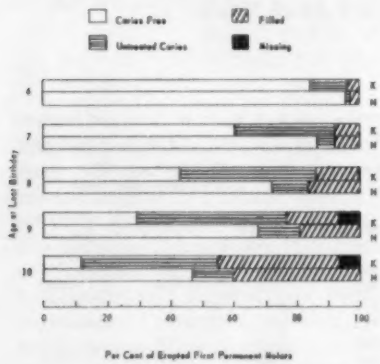


Fig. 1 • Status of erupted first permanent molars in children age 6-10, based on clinical and roentgenographic examinations, Kingston and Newburgh, N. Y., 1953-54

Whereas the DMF rates for molars among the Newburgh 6 and 7 year old group are 73 per cent and 66 per cent lower than those for comparable Kingston children, the difference at age 10 is 39 per cent. It is suggested that the significantly greater decrease in caries among the younger Newburgh group is explained by the fact that they had been receiving fluoridated water throughout their lives and therefore throughout the developing and calcifying stages of the first molars. On the other hand, the crowns of the first molars of the 10 year old children had already started their development and were in varying stages of calcification before being subjected to ingested water fluorides. The data in Table 3, therefore, appear to confirm the importance of fluoride ingestion during the entire developmental and calcifying stages of teeth for the achievement of maximum benefits from the consumption of fluoridated water.

Figure 1 illustrates in greater detail the effect of ingested water fluorides on first permanent molars by including the DMF components: decayed, missing and filled teeth. The significantly lower caries experience among the Newburgh children is evident at each year of age.

In spite of this, approximately the

Table 3 • DMF[1] molars per 100 erupted first permanent molars in children age 6–10, based on clinical and roentgenographic examinations, Kingston and Newburgh[2], N.Y., 1953-54

Age[3]	Number first permanent molars erupted		First permanent molars DMF				
			Kingston		Newburgh		Per cent difference
	Kingston	Newburgh	Number	Per cent	Number	Per cent	
6	262	193	40	15.3	8	4.1	−73.2
7	248	350	97	39.1	47	13.4	−65.7
8	351	320	198	56.4	87	27.2	−51.8
9	236	292	165	69.9	94	32.2	−53.9
10	168	244	147	87.5	130	53.3	−39.1
Total	1,265	1,399	647	51.1	366	26.2	−48.7
Adj. rate[4]	...	...	...	51.1	...	24.1	−52.8

1. DMF includes teeth decayed, missing (lost subsequent to eruption), or filled.
2. Sodium fluoride added to water supply beginning May 2, 1945.
3. Age (last birthday) at time of examination.
4. Adjusted to first permanent molar population in Kingston in the 1953-54 examination.

same proportion of erupted first permanent molars have been treated (filled) in each city. As a result, the relative proportion of untreated first permanent molars among these Newburgh children is about one fourth of that of the Kingston children. Figure 1 also indicates that although not a single first permanent molar was missing in the Newburgh group, 27 molars (6.7 per cent) were missing among the Kingston 9 and 10 year age group.

As an indication of the benefits of water fluoridation to deciduous teeth, a previous report analyzed the findings among the 6 to 7 year old children in each city after six to seven years following the initiation of water fluoridation.[3] At these ages, the deciduous cuspids and molars are expected to be present, while the incisors would in many cases be exfoliated. With a longer history of fluoridation, it appeared reasonable to study deciduous caries based on children age 6 to 9 with these 12 deciduous teeth (cuspids and molars) present. Table 4 indicates that the percentage of children age 6 to 9 with these 12 teeth present and caries free was 7.2 per cent in Kingston and 23.7 per cent in Newburgh.

It is well established that roentgenographic examinations disclose a significant proportion of clinically undetected caries, particularly in the proximal sur-

Table 4 • Number and per cent of children age 6–9, with caries-free deciduous cuspids, first and second deciduous molars, based on clinical and roentgenographic examinations, Kingston and Newburgh,[1] N.Y., 1953-54

Age[2]	Number of children examined		Number of children with all 12 teeth present and caries free		Per cent children with all 12 teeth present and caries free	
	Kingston	Newburgh	Kingston	Newburgh	Kingston	Newburgh
6	113	74	12	29	10.6	39.2
7	71	94	5	24	7.0	25.5
8	89	80	7	15	7.9	18.8
9	59	73	0	8	0.0	11.0
Total	332	321	24	76	7.2	23.7
Adj. rate[3]	..	..	..	..	7.2	25.8

1. Sodium fluoride added to water supply beginning May 2, 1945.
2. Age (last birthday) at time of examination.
3. Adjusted to age distribution of children examined in Kingston.

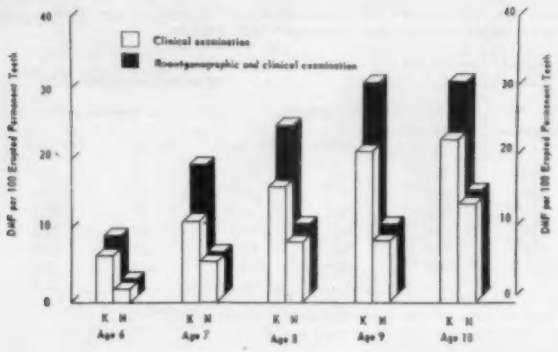


Fig. 2 • DMF per 100 erupted permanent teeth in children age 6-10, as determined by clinical examination and by combined roentgenographic and clinical examination, Kingston and Newburgh, N. Y., 1953-54

faces. Figure 2 depicts graphically the relationship between the clinical and the combined roentgenographic and clinical findings in the two cities. At each age, the additional caries found on roentgenograms add substantially to the clinically determined Kingston caries rate. In Newburgh, however, the rate increase is relatively small, suggesting a certain preferential protection for proximal surfaces. If protection from fluoridation is not selective with regard to surface, the proportion of new caries by surface should be approximately the same in the two cities.

To answer this question, the records were reviewed to determine the number of permanent teeth whose carious lesions were limited to the proximal surfaces or to the occlusal surface. Caries limited to buccal or lingual surfaces were so few in number that no attempt was made to analyze them separately. The results are shown in Table 5. At each age, the proportion of caries originating on proximal surfaces is considerably higher in the control city (Kingston) than in the fluoride city (Newburgh). Although the rates for 6 year old children are based on relatively small numbers of permanent

Table 5 • Origin of caries in permanent teeth by surface in children age 6–10, based on clinical and roentgenographic examinations, Kingston and Newburgh[1], N.Y., 1953-54

Age[2]	Carious permanent teeth with only proximal or occlusal caries		Carious permanent teeth with				Per cent of caries originating on			
			Proximal surface caries only		Occlusal surface caries only		Proximal surface		Occlusal surface	
	Kingston	Newburgh	Kingston	Newburgh	Kingston	Newburgh	Kingston	Newburgh	Kingston	Newburgh
6	32	5	5	0	27	5	15.6	0.0	84.4	100.0
7	75	32	27	1	48	31	36.0	3.1	64.0	96.9
8	140	62	57	12	83	50	40.7	19.4	59.3	80.6
9	128	69	73	10	55	59	57.0	14.5	43.0	85.5
10	121	92	63	12	58	80	52.1	13.0	47.9	87.0

1. Sodium fluoride added to water supply beginning May 2, 1945.
2. Age (last birthday) at time of examination.

teeth, the pattern is consistent at each year of age. This indicates that fluoridation is especially effective in preventing those lesions which are most difficult to detect and to correct; namely, proximal caries. Therefore, while the over-all benefit from water fluoridation is approximately 60 per cent among children, the reduction in time and cost of care for this group is of even greater magnitude.

SUMMARY

This report is based on comprehensive clinical and roentgenographic examinations of 756 children 6 to 10 years old: 374 in Kingston and 382 in Newburgh. This series of examinations, which was completed between eight and nine years after initiation of the fluoridation of Newburgh's water supply showed that the DMF rate was 60 per cent lower among the Newburgh children than among the Kingston children. The DMF in first permanent molars among the Newburgh group was about 50 per cent of that found in the Kingston group. Not a single first permanent molar was missing among the Newburgh children studied, whereas in Kingston approximately 7 per cent of the erupted first permanent molars among the 9 and 10 year old children were already missing. The proportion of children with caries-free deciduous teeth, as defined in this study, was more than three times greater in the Newburgh 6 to 9 year old age group. The DMF rate in Newburgh was increased 13 per cent through use of roentgenographic examination, whereas the rate for Kingston was increased 40 per cent. A detailed analysis of the surface of origin of dental caries in permanent teeth substantiates the impression that fluoridation offers greater protection to the proximal surfaces than to the occlusal surface.

Progress of Science • In the progress of science there are two processes at work. In the one there is the steady accumulation of factual knowledge, and in the other there is an attempt to interpret the facts in terms of unifying principles. It is the interplay of theory and experiment which leads to the most important advances, for often the interpretation of one sort of fact leads to the prediction of new results. The most impressive advances are produced when general hypotheses are put forward which bring different branches of science within the same comprehensive scheme. *John Lennard-Jones, "New Ideas in Chemistry," Scientific Monthly 80:175 March 1955.*

COUNCIL ON LEGISLATION

O.A.S.I. costs and benefits

Since the first of the year, members of the Association have shown a renewed interest in the facts about O.A.S.I. The Council on Legislation believes that the following discussion and illustration should serve to clarify the advantages and disadvantages of self-employed coverage. After lengthy discussion spread over two days, the House of Delegates at the ninety-fifth annual session of the Association went on record for the fifth time against coverage for dentists under O.A.S.I.

Old Age Insurance is a government-sponsored plan for providing a partial replacement of income lost to an individual on account of retirement from active gainful employment after such individual has attained the age of 65. It also provides for monthly benefit payments to the wife and dependents of the retired insured while he is still living. The Survivors' Insurance feature of the plan provides for monthly benefits to the dependent children of deceased insured individuals, to their widows under certain circumstances, and, where there is no widow or dependent child, to their dependent parents.

ELIGIBILITY FOR BENEFITS

All employed persons and most self-employed persons are covered by the system. To be eligible for old age benefits, an insured individual must have been engaged in a covered employment either for one-half the quarters elapsing between January 1, 1951, and his sixty-fifth birthday, or one-half the quarters between his twenty-second and his sixty-fifth birthdays, or a period of forty quarters during such periods. In any event, he must have been engaged in such employment for a minimum of six quarters.

After he has qualified, he may apply for old age benefits. During the time he is in receipt of such benefits before he attains age 72, he may not earn more than $1,200 per year. For each $80 he earns over that amount, one month's benefit is deducted. Since dependents can only receive benefits when the covered individual is receiving them, their benefits are also proportionately reduced.

Family benefits may be paid, concurrently with the receipt of retirement benefits, to: (a) dependent children under 18; and (b) to wives 65 or more, or to wives of any age when there are children under 18.

Survivors' benefits may be paid after the death of a covered individual: (a) to his widow, when she is over 65; (b) to children under 18; (c) to the widow, regardless of age, where there are children under 18 in her custody; and (d) to dependent parents of the deceased covered individual where there is neither widow nor dependent children.

A lump sum benefit, equal to three times the amount of the monthly benefit of a deceased individual, but not exceeding $255, may be paid to the widow of such individual.

AMOUNT OF BENEFITS

Retirement benefits to the insured individual are calculated by dividing the number of months he was eligible for covered employment into the total amount of wages, up to $4,200 per year, which he earned during periods of covered employment, and by applying the following formula to the resultant dividend:

55 per cent of the first $110, plus 20 per cent of the next $240.

If an individual earned $4,200 during each year of possible covered employment, the dividend (called "average monthly wage") would be $350. Application of the formula would produce a benefit of $108 per month.

Dependents' benefits are calculated as a percentage of the primary benefit. Wives, if eligible, are entitled to one-half, and each dependent child under 18 to one-half the amount received by the retired person, with a maximum family benefit of $200 per month.

Survivors' benefits are similarly calculated, except that the widow receives three-quarters of the primary insurance amount and a single child receives three-quarters of the primary insurance amount. If there is more than one child, each child gets one-half of the primary insurance amount, plus one-fourth of such amount divided by the total number of children. Here again, no family may receive more than $200 monthly in total benefits.

WHAT DOES ONE PAY FOR OASI?

Each covered self-employed worker pays a tax on the first $4,200 of his annual earnings concurrently with his income tax, which tax is paid into the OASI Trust Fund. The amount of tax is as follows: 1954 through 1959, 3 per cent; 1960 through 1964, 3¾ per cent; 1965 through 1969, 4½ per cent; 1970 through 1974, 5¼ per cent; 1975 and thereafter, 6 per cent.

Assuming that a dentist earns the full $4,200 of taxable income each year, the dollar amounts of the tax would be: 1954 through 1959, $126 per year; 1960 through 1964, $157.50 per year; 1965 through 1969, $189 per year; 1970 through 1974, $220.50 per year; 1975 and thereafter, $252 per year.

COMPARISON OF COSTS VERSUS ANTICIPATED BENEFITS

Most persons who favor the inclusion of dentists in OASI seem to be most impressed with the alleged relatively small amount of dollar contributions which will produce allegedly great amounts of dollar benefits. It is manifestly impossible to prepare examples covering all situations, since this would involve knowledge of the individual's present age, his wife's present age, the number of their children and their respective ages, the actual date of death of the individual and his wife, and the dates of death of any children who might die before age 18 after becoming eligible for benefits. It is possible, however, to assume certain hypothetical situations and to apply cost and benefit factors to these assumed cases.

EXAMPLE OF AN ASSUMED SITUATION

A dentist enters the OASI system in 1955 at age 25. Assuming he earns over $4,200 per year and retires at 65, he will pay $8,460 in OASI taxes at the rates presently set out in the statute. (See Table 5 for list of tax rates.)

If our hypothetical dentist were to marry about the time he enters practice, he would probably marry a girl age 22. Under such circumstances, it is probable that any children they might have would attain age 18 before the dentist became 65 and therefore consideration of children's benefits may be disregarded in our analysis of retirement benefits to be received under OASI by the dentist and his wife.

White males in the age bracket of our hypothetical dentist may, according to insurance tables, be expected to live until age 70. (This is somewhat higher than the average age of death of dentists at this time, which is 67.3.) White females, in the age bracket of our dentist's wife, may currently expect to live until age 75.

Between the date of his retirement and the date of his death, our dentist would receive $6,840 in OASI benefits. His wife would receive wife's benefits for two years while he was still alive, or $1,296. At his death, she would receive a lump sum benefit of $255. During her remaining life expectancy of eight years, she would receive widow's benefits amounting to $7,776. Thus, the total benefits for his family would amount to $15,807, for a tax contribution of $8,460.

COMPARISON OF ASSUMED CASE WITH A SAVINGS PLAN

It is evident that the $7,467 worth of benefits received by the family in excess of tax contributions must be acquired by the government from some source. It is also apparent that at the death of the last survivor of an eligible beneficiary there is no residuary estate left in OASI funds to pay to heirs of the insured individual or his OASI beneficiaries.

An example has been prepared to ascertain what would occur were the family described here to make an annual deposit of money, equivalent to the OASI tax for each year, in a savings account which paid 3 per cent interest per annum, compounded on a semi-annual basis, and then commencing at age 65 to make withdrawals from such fund on the same basis as benefit payments would be received from OASI. (For convenience, an annual sum equivalent to the total annual OASI benefit has been charged against the accumulation at the beginning of each year, thus reducing somewhat the amount of interest which would have been earned had the withdrawals been on a monthly basis.)

This example shows (Table 1) that a fund of $15,418.64 would be accumulated by the time the dentist reached his sixty-fifth birthday. (This is only $388.36 less than the total benefits he and his wife would receive from OASI.) Assuming that the dentist commenced to withdraw from this fund on his sixty-fifth

birthday the same amount which he would receive from OASI benefits; that his wife began to withdraw an amount equal to her benefits on her sixty-fifth birthday; that at the time of his death she withdrew $255 for a death benefit and thereafter withdrew at the usual rate of widow's benefits under OASI; we find that at the date of her anticipated death, there would still remain in the fund for testamentary disposition, $2,752.56 (see Table 2).

AFTER 1975 WHAT?

In 1975, the tax rate for the self-employed will reach its statutory maximum of 6 per cent per annum. Assuming that our dental family described here entered the system after 1975, the dentist would pay into the OASI fund in taxes, prior to his sixty-fifth year, $10,080. The benefits would still amount to $15,807, since there is no present provision in the law for an increase in benefits as the tax rate increases.

However, if our dentist paid into his private fund at the full rate of $252 per annum, at his sixty-fifth birthday it would amount to $19,675.59 (Table 3). If withdrawals were made at OASI rates until the wife's death, there would, at that time, be $9,021.18 left for testamentary disposition (Table 4).

WINDFALL ASPECTS

It will be noticed that the example has been computed on the basis of 40 years of participation in the program which resulted in the payment of $8,460 in taxes, if the individual were to enter the program in 1955; or $10,080 in taxes, if the individual were to enter the program in 1975. In either case, he would receive $15,807 in benefits to himself and his family in terms of retirement benefits and survivors' benefits to his aged widow.

To the extent that an individual dentist is closer to 65 than age 25, he will pay commensurately less OASI taxes and will receive a commensurately greater return in benefits. This is particularly true if dentists enter the system in 1955 through 1959, since those will be the years of lowest taxation.

SURVIVORSHIP ASPECTS

With the exception of the benefits to the widow set out in the example, this memorandum has not discussed survivorship benefits. These are the benefits paid to a widow who has children under 18 in her custody and benefits paid to the children themselves until they reach age 18. There can be no doubt that, to the extent that dentists may die early in life leaving a widow and young children, the OASI benefits are an exceptionally cheap form of insurance. Because of the myriad possible combinations of situations, no attempt has been made to prepare examples illustrating this effect, but tables showing the ages and causes of death of dentists in 1951, 1952, and 1953 are included (Tables 6, 7, 8, and 9).

THE $40,000 FALLACY

Many persons who support OASI have made a great point of the fact that it would take a capital fund of $40,000 invested at 5 per cent to provide, in dividends, the $1,944 which a retired individual and his wife, if she were over 65, would receive annually in OASI benefits. Others, including Administration spokesmen, have pointed out that it would take in excess of $32,000 invested at 4 per cent to provide maximum annual benefits to a retired individual alone. While it is true that the return on these sums would be as stated, what is not said is that these would be capital funds which would remain intact during the individual's lifetime and be available for testamentary disposition at his death. This is not the case with OASI. At the death of the survivor entitled to benefits, nothing remains for testamentary disposition.

The proper comparison is to a capital fund of a sufficient size to permit withdrawals at the same rate as OASI benefits are paid. As indicated by the example shown in the tables attached to this memorandum, the necessary amount of such a fund would be on the order of $12,000.

TABLES

For convenience, nine tables are included. Reference to these tables will permit solution of most of the hypothetical cases which the reader may desire to assume for the purpose of testing the dollar value of OASI in terms of contributions versus returns, or for the purpose of comparing savings accumulations versus withdrawals.

Table 1 shows the amount which would be accumulated by years, if an individual were to deposit in a savings account annually a sum of money equivalent to OASI taxes at the rates specified for maximum earnings for the particular year, assuming that interest at the rate of 3 per cent per annum, compounded semiannually, were to be earned by the funds on deposit.

Table 2 indicates the decrease in fund value of savings accumulated as in Table 1, where withdrawals are made on an annual basis in

amounts equivalent to the annual total amount of OASI benefits payable to an individual and his beneficiaries under an assumed set of circumstances, and where interest is credited semiannually, at 3 per cent per annum, to the dollar balance of the account.

Table 3 is similar to Table 1, except that deposits are calculated at the maximum rate of OASI taxes.

Table 4 is similar to Table 2, except that withdrawals are made from a fund accumulated under the conditions of Table 3.

Table 5 is a list of the dollar amounts of taxes payable in specified years into the OASI Trust Fund by an individual earning $4,200 per year or more, plus a table of the dollar value of monthly benefits payable to an insured individual and his dependents, assuming that he is eligible for maximum benefits.

Tables 6, 7, and 8 are lists of the ages of dentists at death during the years 1951, 1952, and 1953, together with the causes of death. Table 9 shows the estimated number of dentists who will die in 1954 and the estimated number who will reach age 65 in specified years.

Table 1 • Yearly investment of amount equal to social security taxes, with annual interest at 3 per cent compounded semiannually

Year	Amount invested	Amount at beginning of year	Amount at end of year
1955	$126.00	$ 126.00	$ 129.81
1956	126.00	255.81	263.53
1957	126.00	389.53	401.30
1958	126.00	527.30	543.24
1959	126.00	669.24	689.47
1960	157.50	846.97	872.57
1961	157.50	1,030.07	1,061.20
1962	157.50	1,218.70	1,255.53
1963	157.50	1,413.03	1,455.74
1964	157.50	1,613.24	1,662.00
1965	189.00	1,851.00	1,906.95
1966	189.00	2,095.95	2,159.30
1967	189.00	2,348.30	2,419.27
1968	189.00	2,608.27	2,687.10
1969	189.00	2,876.10	2,963.03
1970	220.50	3,183.53	3,279.75
1971	220.50	3,500.25	3,606.04
1972	220.50	3,826.54	3,942.20
1973	220.50	4,162.70	4,288.52
1974	220.50	4,509.02	4,645.31
1975	252.00	4,897.31	5,045.33
1976	252.00	5,297.33	5,457.44
1977	252.00	5,709.44	5,882.01
1978	252.00	6,134.01	6,319.41
1979	252.00	6,571.41	6,770.03
1980	252.00	7,022.03	7,234.27
1981	252.00	7,486.27	7,712.54
1982	252.00	7,964.54	8,205.27
1983	252.00	8,457.27	8,712.89
1984	252.00	8,964.89	9,235.85
1985	252.00	9,487.85	9,774.62
1986	252.00	10,026.62	10,329.68
1987	252.00	10,581.68	10,901.52
1988	252.00	11,153.52	11,490.63
1989	252.00	11,742.63	12,097.55
1990	252.00	12,349.55	12,722.81
1991	252.00	12,974.81	13,366.97
1992	252.00	13,618.97	14,030.60
1993	252.00	14,282.60	14,714.29
1994	252.00	14,966.29	15,418.64

Table 2 • Withdrawals from private fund of $15,418.64 at OASI rate of benefits

Age		Withdrawn	Amount remaining after withdrawal at beginning of year	Amount at end of year (annual interest of 3 per cent compounded semiannually)
Husband	Wife			
65	62	$1,296	$14,122.63	$14,549.50
66	63	1,296	13,253.50	13,654.09
67	64	1,296	12,358.09	12,731.61
68	65	1,944	10,787.61	11,113.67
69	66	1,944	9,169.67	9,446.82
	67	972+255	8,219.82	8,468.26
	68	972	7,496.26	7,722.83
	69	972	6,750.83	6,954.87
	70	972	5,982.87	6,163.70
	71	972	5,191.70	5,348.62
	72	972	4,376.62	4,508.90
	73	972	3,536.90	3,643.80
	74	972	2,671.80	2,752.56

Table 3 • Yearly investment of $252 with annual interest of 3 per cent compounded semiannually

Year	Amount at beginning of year	Amount at end of year	Year	Amount at beginning of year	Amount at end of year
1	$ 252.00	$ 259.62	21	$ 7,243.99	$ 7,462.94
2	511.62	527.08	22	7,714.94	7,948.12
3	779.08	802.63	23	8,200.12	8,447.97
4	1,054.63	1,086.51	24	8,699.97	8,962.93
5	1,338.51	1,378.97	25	9,214.93	9,493.45
6	1,630.97	1,680.26	26	9,745.45	10,040.00
7	1,932.26	1,990.66	27	10,292.00	10,603.08
8	2,242.66	2,310.44	28	10,855.08	11,183.18
9	2,562.44	2,639.89	29	11,435.18	11,780.81
10	2,891.89	2,979.30	30	12,032.81	12,396.50
11	3,231.30	3,328.97	31	12,648.50	13,030.80
12	3,580.97	3,689.20	32	13,282.80	13,684.27
13	3,941.20	4,060.32	33	13,936.27	14,357.49
14	4,312.32	4,442.66	34	14,609.49	15,051.06
15	4,694.66	4,836.56	35	15,303.06	15,765.60
16	5,088.56	5,242.36	36	16,017.60	16,501.73
17	5,494.36	5,660.43	37	16,753.73	17,260.12
18	5,912.43	6,091.14	38	17,512.12	18,041.42
19	6,343.14	6,534.86	39	18,293.42	18,846.34
20	6,786.86	6,991.99	40	19,098.34	19,675.59

Table 4 • Withdrawals from private fund of $19,675.59 at OASI rate of benefits

Age		Withdrawn	Amount remaining after withdrawal at beginning of year	Amount at end of year (annual interest of 3 per cent compounded semiannually)
Husband	Wife			
65	62	$1,296	$18,379.59	$18,935.11
66	63	1,296	17,639.11	18,172.25
67	64	1,296	16,876.25	17,386.33
68	65	1,944	15,442.33	15,909.07
69	66	1,944	13,965.07	14,387.16
	67	972+255	13,160.16	13,557.93
	68	972	12,585.93	12,966.34
	69	972	11,994.34	12,356.87
	70	972	11,384.87	11,728.98
	71	972	10,756.98	11,082.11
	72	972	10,110.11	10,415.69
	73	972	9,443.69	9,729.13
	74	972	8,757.13	9,021.81

Table 5 • List of tax rates and monthly benefits

Tax rates	
1955–1959	$126.00
1960–1964	157.50
1965–1969	189.00
1970–1974	220.50
1975 and thereafter	252.00
Monthly benefits	
Retired insured individual	108.50
Wife of retired insured individual having children under 18 in her care	54.30
Wife over 65 of retired insured individual regardless of children	54.30
Child under 18 of retired insured individual	54.30
Widow 65 or over of deceased insured individual	81.40
Widow under 65, having children of deceased insured individual under 18 in her care	81.40
Single child under 18 of deceased insured individual	81.40
Two children under 18 of deceased insured individual: each child	67.90
Three children under 18 of deceased insured individual: each child	63.40
Four children under 18 of deceased insured individual: each child	61.10
Death benefit, payable to widow or to person who pays funeral bill (single payment)	255.00

Note: Each person entitled to a benefit shown receives it individually following his own application for such benefit. Where benefits are payable to more than one member of a family, the total monthly benefits payable to all individuals cannot exceed $200.
OASI benefits are not subject to income tax.

Table 6 • Causes of death of dentists by age groups, 1951, as reported by 31 state departments of health

Cause of death	Under 40	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85 and over	Total	Per cent
Infective and parasitic diseases	1		1	1		3	1	2	2			11	1.5
Neoplasms	4	3	5	9	13	12	15	19	19	6	2	107	14.8
Allergic, endocrine system, metabolic and nutritional diseases			1	1	1		1	2	3	2	1	12	1.7
Diseases of the blood and blood-forming organs	1								1			2	0.3
Mental, psychoneurotic and personality disorders		1			1				2			4	0.6
Diseases of the nervous system and sense organs	1	1	2	1	6	12	7	11	12	10	5	68	9.4
Diseases of the circulatory system	2	8	19	35	45	44	52	70	69	51	22	417	57.7
Diseases of the respiratory system				3	2	2	2	1	3	2	2	17	2.4
Diseases of the digestive system		1	2	3	3	5	3	5	2	1	2	27	3.7
Diseases of the genitourinary system	1	1				2	1	1	4	3	2	15	2.1
Diseases of the skin and cellular tissue						1						1	0.1
Diseases of the bones and organs of movement									1			1	0.1
Congenital malformations				1		1		1				3	0.4
Symptoms, senility and ill-defined conditions							1				1	2	0.3
Accidents, poisonings and violence	4	3	2	2	3	4	2	3	6	1	5	35	4.9
Total	14	18	32	56	74	85	86	115	124	76	42	722*	
Per cent	1.9	2.5	4.4	7.8	10.3	11.8	11.9	15.9	17.2	10.5	5.8		100.0

Mean age at death: 67.4.
Median age at death: 69.3.
*This number represents approximately 45 per cent of all dentists who died in 1951.

Table 7 • Causes of death of dentists by age groups, 1952, as reported by 39 state departments of health

	Under 40	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85 and over	Age unknown	Total	Per cent
Infective and parasitic diseases	1					4	1	1	2	1			10	1.2
Neoplasms	3	1	10	13	18	16	27	27	18	11	5		149	17.3
Allergic, endocrine system, metabolic and nutritional diseases			1		3	1	4	6	7	1	1		24	2.8
Diseases of the blood and blood-forming organs						1	1						2	0.2
Mental, psychoneurotic and personality disorders					2			1					3	0.4
Diseases of the nervous system and sense organs		3		4	7	6	13	15	24	15	9		96	11.2
Diseases of the circulatory system	6	7	16	50	62	53	51	65	72	43	27	2	454	52.9
Diseases of the respiratory system	1				2	4	3	3	5	4	1		23	2.7
Diseases of the digestive system	2		1	3	2	6	2	5	3	1	1		26	3.0
Diseases of the genito-urinary system	1		3		3	3	2	1	3	5	4		25	2.9
Diseases of the bones and organs of movement										1			1	0.1
Congenital malformations						1							1	0.1
Symptoms, senility and ill-defined conditions			1			3		1		2	2		9	1.1
Accidents, poisonings and violence	3		3	3	4	5	2	3	7	2	3		35	4.1
Total	17	11	35	73	103	103	106	128	141	86	53	2	858*	
Per cent	2.0	1.3	4.1	8.5	12.0	12.0	12.4	14.9	16.4	10.0	6.2	0.2		100.0

Mean age at death, 67.3; median age at death, 67.

*This number represents approximately 52 per cent of all dentists who died in 1952.

Table 8 • Causes of death of dentists by age groups, 1953, as reported by 39 state departments of health

Causes of death	Under 40	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90 & over	Total	Per cent
Diseases of the circulatory system	4	9	17	38	87	80	83	81	88	61	36	6	590	54.9
Neoplasms	3	3	10	8	16	24	18	28	25	12	12		159	14.8
Diseases of the nervous system and sense organs	2	2	3	5	9	14	20	20	24	19	7		125	11.6
Accidents, poisonings and violence	8	6	5	7	6	7	8	6	5	2	2	1	63	5.8
Diseases of the digestive system	2	3	3	7	5	6	1	4	1	5	1		38	3.5
Diseases of the respiratory system	1	1		2	2	3	4	4	9	3	1	3	33	3.1
Allergic, endocrine system, metabolic and nutritional diseases		1	2			4	1	3	4	3	1		19	1.8
Diseases of the genito-urinary system	1		1		1	2	1	2	5	2		1	16	1.5
Symptoms, senility and ill-defined conditions			2	1	1	1			3	1	2	3	14	1.3
Infective and parasitic diseases	1			1	2	2	3	1	1				11	1.0
Diseases of the blood and blood-forming organs				1					1				2	0.2
Diseases of the skin and cellular tissue		1								1			2	0.2
Mental, psychoneurotic and personality disorders					1								1	0.1
Diseases of the bones and organs of movement							1						1	0.1
Congenital malformations			1										1	0.1
Total	22	26	44	70	130	143	140	149	166	109	62	1	1,075*	
Per cent	2.1	2.4	4.1	6.5	12.1	13.3	13.0	13.9	15.4	10.1	5.8	1.3		100.0

Mean age at death, 67.3; median age at death, 67.

*This number represents approximately 65 per cent of all dentists who died in 1953.

Table 9 • Estimated number of dentists who will die in 1954, by age groups, and estimated number of dentists who will reach age 65 in specified years

Estimated no. who will die in 1954		Estimated no. who will reach age 65	
Age	Number	Year	No. reaching 65
Under 40	34	1955	1,267
40–44	31	1956	1,380
45–49	71	1957	1,502
50–54	139	1958	1,641
55–59	190	1959	1,754
60–64	202	1960	1,792
65–69	208	1965	1,664
70–74	242	1970	1,708
75–79	286	1975	1,339
80–84	175		
85 and over	102		
Total	1,700		

Statement of the American Dental Association on H.R. 2886, 84th Congress, Committee on Armed Services, House of Representatives

On April 28 representatives of the Council on Legislation appeared before the Committee on Armed Services of the House of Representatives and presented the Association's objections to the extension of the special dentists-physicians draft bill (H.R. 2886) now before Congress. The Association's favorable attitude towards the extension of the $100 monthly compensation measure was also presented on that date before the same body. J. Claude Earnest, vice chairman of the Council on Legislation, accompanied by Mr. Bernard J. Conway, secretary and Mr. Howard N. Greenblatt, assistant secretary, respectively, of the Council, presented the Association's testimony which follows:

The American Dental Association is opposed to the extension of the special registration and induction of dentists as proposed by H.R. 2886. The Association has conferred with officials of the Department of Defense three times since the beginning of this year. None of the Department's reasons for continuing special draft provisions, in our opinion, justifies a modification of the position taken by the Association's House of Delegates opposing the extension of the discriminatory features of the Doctor Draft Law. Before I discuss the Association's position, however, I would like to review briefly the history of this law and the efforts of the American Dental Association over the past five years to help the military services solve their dental manpower problems.

DENTAL MANPOWER PROBLEM

The American Dental Association supported the original enactment of Public Law 779 in 1950 and did not oppose its two-year extension in 1951. At that time, the nation was engaged actively in hostilities in Korea, and there were not nearly enough dentists available from the regular Selective Service registrant group to fill the sharply increased dental officer needs.

Late in 1952, the Association's secretary, in compliance with policies adopted by our House of Delegates in 1951 and 1952, presented an official request to the Secretary of Defense for the establishment of a commission of civilian dentists to help the military dental services plan their programs and professional personnel requirements so that the staffing of the dental corps would not be dependent upon discriminatory legislation such as Public Law 779. The 1951 policy urged that the Department of Defense develop methods for meeting its dental requirements with a minimum of professional personnel; the 1952 policy urged the Department of Defense to establish a civilian dental commission to study and evaluate the military dental programs and their personnel requirements. Although Association representatives discussed the matter with Defense officials in 1953, the then Assistant to the Secretary of Defense for Health and Medical Affairs recommended against the creation of a civilian dental commission.

Despite the failure of the Department of Defense to create a commission to evaluate the operation of the military dental services, the Association again supported another two-year extension of the special draft law in 1953. At that time, the Armed Forces strength was about 3,600,000 and it was generally assumed that mobilization would remain at that level indefinitely.

In October of 1954, the Armed Forces strength was about 3,300,000. The Association's survey of the present senior dental student group indicated that about 1700 members of the 1955 class would be available and acceptable for military service after graduation. The then estimate of fiscal 1956 replacement needs for the military dental services was about 2,000. The Association's Council on Federal Dental Services in its report to the 1954 House of Delegates stated: "Rather than to enact another special liability law for dentists to supply a few hundred additional dental officers each year, it would be more practicable and equitable to adjust the ratio of dental officers to military personnel slightly downward so that the dental corps strength can be maintained from the yearly increment of dental graduates with basic Selective Service liability."

In January of 1955, the Health Resources Advisory Committee to the Office of Defense Mobilization submitted to the Director of that agency a comprehensive report entitled "Mobilization and Health Manpower." The Committee's report reveals that at the end of fiscal year 1951 there were 1.7 dental officers for every 1,000 persons in active military service; at the end of fiscal years 1952 and 1953 the same staffing pattern prevailed. At the end of fiscal year 1954, however, the ratio of dental officers to Armed Forces strength increased to 1.9 dental officers per 1,000.

In February of 1955, the Hoover Commission's Task Force on Medical Services submitted its report to the Commission and Congress. The Task Force devoted more than a year to an intensive study and evaluation of the military health personnel requirements. Among its major recommendations, the Task Force urged that the Doctor Draft Law not be extended or reenacted, and that the Department of Defense establish a ratio of dental officers to Armed Forces strength not to exceed 1.7 dental officers for every 1,000 persons in active military service. The latest information from the Department of Defense indicates that the staffing pattern of the military dental services may exceed 1.9 dental officers per 1,000 persons in active military service by the end of fiscal year 1955. Thus, since the end of the Korean hostilities, while the Armed Forces strength has been steadily and sharply reduced, the ratio of dental officers to Armed Forces strength has increased.

The evidence available to the American Dental Association completely supports our position that there is no justification for continuing the special military obligation of dentists who are not liable for military service as regular Selective Service registrants. Early this year, the Department of Defense tabulated a dental student survey sponsored jointly by the Department, the Health Resources Advisory Committee, and the Association's Council on Dental Education. Questionnaires were distributed to every dental student. There was practically a 100 per cent response. The questions were designed principally to disclose the potential military liability of each student. The Department of Defense tabulation indicates that at least 1,500 of the 1955 dental graduates are potentially liable for military service as regular Selective Service registrants or as committed reservists. They will be available to fill an estimated Armed Forces replacement need for 1,579 dental officers during fiscal year 1956. The Department's tabulation also indicates that approximately 1,900 of the 1956 dental graduates should be available to fill a replacement quota of 1,946 for fiscal year 1957. The estimated replacement needs are based on a staffing pattern in the order of 1.9 dental officers for every 1,000 persons in active military service. These figures illustrate that substantially all of the military's need for dental officers during the next two fiscal years can be satisfied from the dental graduate group with basic Selective Service liability, even assuming that the present liberal dental officer staffing pattern is maintained. If the military dental services were to reduce that staffing pattern to 1.7 dental officers per 1,000 of Armed Forces strength, at least 300 fewer replacements would be needed each year.

Officials of the Department of Defense have stressed in their discussion with Association representatives that reenactment of the special draft law as proposed by H.R. 2886 is necessary to continue the system for bringing dentists and physicians to active duty in an orderly and efficient manner and to protect the equitable entitlements awarded principally to those serving as a measure of their special liability. Public Law 779, as amended by Public Law 84, 83rd Congress, includes the following pertinent authority: first, the right to call up reservists involuntarily; second, the requirement that special registrants and reservists called up involuntarily be permitted to resign their commissions after fulfilling their obligated tour of active duty; third, the application of stricter conditions for obtaining a deferred status, particularly deferments for hardship reasons; and fourth, indirectly the application of physical standards much lower than those for the general class of regular registrants. The Association agrees that those provisions and all others within existing law which are needed to insure an orderly and efficient procurement procedure should be reenacted by Congress. The Association does not believe, however, that it is necessary to continue the provisions which impose a special liability on dentists who are not liable as regular Selective Service registrants in order to insure an orderly procurement procedure for bringing regular dental registrants to active duty.

AMENDMENT TO H.R. 2886

The Association suggests an appropriate amendment to H.R. 2886 which would simply add a new paragraph to Sub-Section 4(i) of the Universal Military Training and Service Act, as amended. The new paragraph would provide, in effect, that the authority within Sub-Section 4(i) to register specially and make special calls upon dentists shall, after June 30,

1955 be limited to those dentists registered or required to register under Section 3 of the Universal Military Training and Service Act. All other provisions of existing legislation proposed to be reenacted by H.R. 2886 would not be affected.

The Association has always stressed that the quality of dental services provided by the Armed Forces be maintained and improved. There would be, in the Association's opinion, no diminution of the quality of those services, should the Congress accept the Association's recommendations for obtaining dental officer replacements after June 30 of this year. It has been brought to our attention that some members of this Committee question whether the military services will be able to conduct their dental programs competently if they have to rely upon dental graduates as the main source of dental officer replacements. The Association does not believe that such skepticism is warranted. Graduates of dental schools are adequately trained to enter the general practice of dentistry; most graduates who do not enter military service enter general practice in civilian communities shortly after passing their state board examinations. Today, persons entering dental schools have been thoroughly tested for their aptitude in dentistry, both academically and clinically. While in dental school, the student is given extensive clinical as well as academic training. The state dental examining boards, moreover, test carefully the clinical skills of applicants for dental license.

The Navy Dental Corps has, during the past two or three years, relied almost completely on recent dental graduates to fill its replacement needs. The quality of the Navy's dental services has certainly not suffered during that period.

It should be kept in mind that the great majority of dentists in military service are engaged in general practice, doing mostly routine operative work. Invariably, career dental officers, many of them board certified specialists, are assigned to the specialty departments, such as prosthodontics, periodontics, and oral surgery. In addition, the work of dentists assigned to the general operative clinics of the military dental services is closely supervised by experienced dental officers.

Most of us, I am sure, are aware of the excellent assistance that is available to most dental installations from civilian practitioners located nearby. All of the military dental services have established civilian consultant systems. Civilian consultants could and should be used more extensively by the dental installations to which they are affiliated.

The hospital dental services of all three military services are adequately staffed by career dental officers and dental interns and residents carefully selected for their assignments. In fact, the military dental services have taken leadership in establishing approved dental intern and residency programs in hospitals and within their major outpatient facilities.

Perhaps the most compelling lack of justification for continuing the special liability of dentists who are not liable as regular Selective Service registrants is the manner in which the Doctor Draft Law has been used. In the opinion of the Association, the Armed Forces will make no serious efforts to adjust realistically their dental programs and dental personnel requirements as long as they have the present special draft law for obtaining replacements. Although the Department of Defense has assured the Association that it does not plan to use other than recent dental graduates, at least for the next fiscal year, the easy access to the older age groups provided by the Doctor Draft Law may be too tempting to resist. I am sure that this Committee is aware that 330 of the Priority III dentists entering military service during this and the next two months are between 40 and 46 years of age. In fact, the present call for 459 dental special registrants for the last quarter of this fiscal year will practically exhaust the Priority III group below 45 years of age and includes many in the 45 year age group. Those dentists are leaving long-established practices. In many instances, it will be difficult for their patients to find another practitioner in the community able to provide adequately for their health needs. Dislocation of dentists from long-established practices is, therefore, not only a hardship on the dentist, but also on the patients who have long relied on him for their essential dental health needs.

Only a month ago, an episode occurred which crystallized the dental profession's hostility to the manner in which the Doctor Draft Law has been administered. While the Army was having difficulties obtaining its quota of applicants from the 1955 dental graduate group, the Air Force was notifying about 100 senior dental students who had been allocated to that service that they might not be called to active duty until the middle of 1956, a year after graduation. The Navy sent similar notices to about 50 senior students. The Health Resources Advisory Committee quickly dispatched a letter to the Department of Defense, which is charged with coordinating procurement for the three dental services. The Committee urged that the Department withdraw all active duty orders on dentists over 40 years of age and to make every effort to bring the 1955

graduates to active duty as soon after graduation as possible. The Department of Defense did not comply with that recommendation. That episode illustrates a lack of unification, unreasonable competition for personnel, and a sheer waste of dental manpower.

Thus, 330 majors and lieutenant colonels are to be rushed to active duty while 150 first lieutenants will be given postponements. The majors and lieutenant colonels must close up long-established practices and look forward to the difficulties of reestablishing those practices two years from now. The first lieutenants will refrain from incurring the expenses of establishing a practice, knowing the military service beckons. Of greatest consequence, the civilian community will be the loser, in terms of dental health services. This event seems to bear out a highly critical statement in the report of the Task Force on Medical Services. The Task Force states: "We recommend that special draft legislation for health personnel be permitted to expire. We believe that such legislation is unfair in principle and has in the past been abused in administration."

The present lack of planning, coordination, and efficiency in the use of health personnel may well have serious consequences, should this nation be plunged into all-out war. The Armed Forces must recognize that now is the time to develop more efficient types of dental practice, to train and use more auxiliary personnel, and most importantly, to seek means for using civilian practitioners and civilian facilities to the greatest possible extent.

Let us assume that the existing authority for ordering dentists into military service is left unchanged after June 30 of this year. According to the Department of Defense, the military services may need to call up older age special registrants in mid-1956. The only remaining Priority III dentists will, at that time, be between the ages of 46 and 51. Many dentists within that age group will probably not meet the physical standards. A goodly number of them was rejected during World War II for physical reasons. Should there be insufficient dentists within the remainder of the Priority III dental group to maintain the staffing pattern of 1.9 dental officers for every 1,000 persons on active duty, it is conceivable that Selective Service would have no recourse but to place calls on some of the veteran dentists within the Priority IV group. The American Dental Association is unreservedly opposed to the call-up of Priority IV dental officers, unless there is a declaration of national emergency or war. We are sure that Congress must have the same concern for the veteran dentists.

Finally, I would like to pose two questions for the deliberation of this Committee. First, I believe we can agree that the personnel situation of the dental services has not been for many years as favorable as it is today. There will be an increasingly larger number of nonveteran dental graduates with basic Selective Service liability each year. There is every expectation that the Armed Forces strength will be stabilized at something under 3,000,000. The questions I submit to the members of this Committee are these: Would you support now the original enactment of a special draft law for members of the health professions if, as is the case now, such a law could require military service of persons between 46 and 51 years of age and of persons who have previously spent time in military service? Would you support such a law in the face of a five-year record of lack of planning by the military, in the face of evidence that there is a sufficient supply of dentists to meet all reasonable needs, in the face of encouraging the military to continue its extravagant use of dental personnel at the expense of the civilian community, in the face of continuing an ill-advised and compulsory recruitment program which perpetuates low morale in the dental corps and makes improbable the orderly construction of a dental military health force which can serve the nation in a time of war. The Association urges the Committee to oppose extension of the special draft law as proposed by H.R. 2886.

EXTENSION OF SPECIAL PAY AND SCHOLARSHIP PROGRAM

It is our understanding that the proposal before this Committee to extend entitlement for the $100 monthly equalization pay would not apply to dentists, physicians and veterinarians entering active duty in satisfaction of their regular Selective Service liability unless they volunteer for at least one year of extended active duty. All other incoming dental, medical, and veterinary officers, with a few exceptions, would be entitled to the special pay.

The American Dental Association urges this Committee to extend entitlement for the equalization and incentive pay to all categories of personnel now entitled to that compensation. The Association is convinced that no distinction should be made between those dentists who enter active duty as a measure of their basic Selective Service obligation and those dentists who apply for extended active duty. The existing provisions of the Career Compensation Act have authorized the special monthly pay for dentists, physicians, and veterinarians now satisfying their obligations under the Universal Military Training and

Service Act. The Association believes that the present system should be continued. Dental officers entering in the same grade should receive equivalent compensation. Otherwise, the morale of the lower-paid group might suffer. Under that situation, the quality and efficiency of the services' dental care program, which is of paramount importance, might be seriously impaired.

It should be kept in mind, too, that dentists, physicians, and veterinarians who are obligated under the Universal Military Training and Service Act will, no doubt, be required to register as special registrants after receiving their professional degrees. As special registrants, they will not be entitled to the same deferment privileges as regular registrants. The conditions for obtaining a hardship deferment, for example, will not be applicable to them; a lower standard of physical fitness will be used to determine their availability for active service.

The Association has always supported the $100 monthly equalization and incentive pay. The reasons for which it was enacted and extended are sound. It serves to equalize the income opportunities of dental, medical, and veterinary officers with their civilian counterparts. More importantly, perhaps, the special pay is one of the principal incentives for remaining in the career military service.

The Association also supports, in principle, the Armed Forces scholarship program. Because of the limitations of time, we are submitting for the record a written statement of our position on that legislation. Our only objection to the scholarship plan legislation is the lack of a termination date. The Association suggests that the scholarship plan be authorized for a ten-year period.

I wish to thank the Committee, in behalf of the American Dental Association, for the privilege and opportunity to present our position on this important legislation.

Council on Legislation testifies on health research facilities construction funds

On March 31, H. Trendley Dean, secretary of the Association's Council on Dental Research, appeared before the Subcommittee on Health of the Senate Committee on Labor and Public Welfare. The hearing was devoted to S. 849, a bill to provide grants-in-aid to dental and medical schools for constructing and expanding research facilities. The plan would authorize $30,000,000 a year for three years on a matching basis. The Council testified in support of the federal assistance program. The text of the statement presented by Dr. Dean follows.

The proposed "Medical Research Act of 1955," S. 849, establishes four fundamental assumptions on which the need of federal support for the construction of nonfederal health research facilities is based. In substance, those assumptions are: first, that certain devastating diseases cause widespread suffering and weaken the nation's economy and military strength; second, that scientific development of health research is retarded in many areas where research skills and patients are presently available; third, that attracting more young scientists into health research depends primarily upon making facilities available for their endeavors; and fourth, that freshness of vision and exploration of new ideas will be enhanced by making research opportunities available in all regions of the country under competent local auspices. It would be difficult to challenge the validity of those premises. The first is particularly applicable to the nation's health problem and economic burden caused by dental disease. The others portray a pattern of neglected research potential that has materially retarded the development of an adequate dental research program in the United States.

Few persons are fortunate enough to avoid

the suffering caused by dental disease. Most individuals, moreover, experience the ravages of dental caries and the periodontal diseases before reaching their middle years. The loss of a substantial number of permanent teeth is not uncommon among the young adult and middle aged groups within our population. And despite the excellent corrective and restorative services provided by practicing dentists, the diminishment or loss of dental function, in too many instances, contributes to the aggravation of other systemic conditions, and is a particular handicap to those whose occupation requires them to deal with the public.

Dental caries is the most prevalent disease in the United States today. There is no need to support this truism with statistics; most persons among this group have undoubtedly received treatment for carious conditions not once, but many times. Nor does the dental problem begin and end with dental decay and its many crippling effects. The periodontal diseases are also among the most prevalent of diseases affecting the American populace. Three-fourths of the persons over 40 years of age who have teeth extracted lose them as a result of periodontal disease. The physical, social, and economic toll taken by dental caries and the periodontal diseases is staggering. Perhaps the best reflection of the nation's dental burden is the annual cost of dental care borne by the civilian population. About one and one-half billion dollars is spent annually for private dental health services. Despite this tremendous expenditure, less than one half of the population obtains adequate dental care.

Although the treatment of dental caries and the periodontal diseases and correction of their effects are necessarily the main concern of the dental profession, the dentist, today, is also trained to detect and remedy many other oral disorders. Early recognition of oral cancer by the dentist, for example, is of utmost importance in the control of that devastating disease. Recent studies have shown that 7 per cent of cancerous conditions occur in the mouth or lips. In 1950, there were 5,138 reported deaths from oral cancer. Crippling deformities in the dentofacial anatomy are also of vital concern to the dental profession. One of these conditions, cleft lip and cleft palate, occurs in about one of every 800 live births.

A successful attack on dental disorders must depend ultimately on effective methods of prevention. Only research can provide the knowledge essential for the development of effective preventive measures. The past decade has seen an aroused interest in dental research, but progress has been retarded by the small amounts of money available for dental research grants and by the lack of facilities and equipment to carry out investigations. The problem of inadequate facilities for dental research, in the Association's opinion, exists here at the National Institutes of Health. The dental research activities of the Institute have outgrown their facilities. Although Congress, as far back as 1948, foresaw the need for an expansion of facilities for the National Institute of Dental Research, only a token effort has been made in that direction. Most members of this Committee undoubtedly recall the enactment of Public Law 755, 80th Congress. Within that Act, Congress authorized an appropriation of 2 million dollars "for the erection and equipment of suitable and adequate buildings and facilities for the use of the National Institute of Dental Research." Congress, moreover, clearly expressed its intention that the expenditure of those funds should be expedited to carry out the purpose of Public Law 755. Although $100,000 of the 2 million dollar authorization has been spent for the building plans, nothing further has been done to carry out the intent of Congress. The remainder of the authorization, $1,900,000, unfortunately would not be sufficient today to construct the building according to the plans drawn up in 1949. It is estimated that the building and equipment as specified in the plans would cost at least 33 per cent more to construct today than in 1948-49. The federal government's failure to show an adequate appreciation of the need for expanding dental research efforts is also reflected in the proposed budget for fiscal 1956 dental research activities of the National Institute of Dental Research. The grants for dental research projects conducted by the dental schools and other private institutions amount to only $421,000; the grants for dental fellowships are limited to $100,000. Reports from the dental schools alone would justify at least 1 million dollars to support worthy dental research projects and $250,000 in fellowship awards. Those increases are fully warranted if only to assist the federal government to reduce its dental care expenditures. The dental treatment of federal beneficiaries costs the government each year over 100 million dollars.

The approach within S. 849 is, of course, in the direction of expanding private research facilities, particularly in schools for training health practitioners. The American Dental Association supports the objectives of the proposed "Medical Research Act of 1955" without reservation. The Association has long supported the principle that federal funds should be made available to dental schools which are not able through private resources to support their programs adequately. On two occasions,

the Association has testified in favor of legislation designed to assist dental and medical schools to expand and improve their facilities and equipment. One of the primary factors in determining the Association's support of federal grants to the dental schools was their need for research facilities and equipment.

Within the last two months, the Council on Dental Education of the American Dental Association completed a survey of the dental schools to determine their need for additional facilities and equipment. The survey also disclosed the funds needed, but not available, to finance essential expansion and improvement of present facilities. Forty of the 43 dental schools submitted detailed information in reply to the Council on Dental Education's questionnaire. Thirty-eight of the 40 schools indicated a need of about 30 million dollars for new construction and 10.5 million dollars for equipment for all purposes. They reported only about 6.5 million dollars on hand to finance their needed projects. In the list of areas of need, 28 dental schools reported that their research laboratories are inadequate. Thirty-four schools stated that their research equipment is insufficient. There is every reason to believe that a considerable proportion of the 90 million dollar grants-in-aid proposed by S. 849 could be profitably utilized by the dental schools for the expansion of research facilities and equipment. It is also reasonable to assume that the required matching funds would be forthcoming as a result of the stimulus supplied by available federal support.

In evaluating the specific provisions of the "Medical Research Act," the Association is concerned principally with three of its important features and implications. The formula for equalizing federal grants among the four geographical regions designated in the legislation may arbitrarily restrict development of worthy research projects. The Association suggests that this Committee evaluate the disposition of the grants periodically, should the legislation be enacted, to determine the efficacy of the formula. The regional plan for allocating funds appears to be favorable in terms of the location of the 43 dental schools. There are presently 8 schools in Region I, 10 in Region II, 14 in Region III, and 11 in Region IV. Two more dental schools may shortly be added to Region I: Seton Hall and Fairleigh Dickinson Colleges in New Jersey are completing arrangements for the establishment of Schools of Dentistry. One more may shortly be added to Region II: West Virginia University has approved the addition of a School of Dentistry to its program.

The second concern of the Association is with the actual administration of the grants. The American Dental Association believes that the grants for construction and expansion authorized by S. 849 should be distributed equitably and should reflect an appreciation of the need for research in fields which are now neglected. If that criterion is established, the Association is certain that the dental schools, particularly, will receive a fair share of the available funds. Finally, the Association suggests that a provision be added to S. 849 to safeguard the schools from any encroachment on the administration of their research programs by the federal government.

In behalf of the American Dental Association, I wish to thank the Committee for the opportunity of presenting the position of the Association on this important legislation.

COUNCIL ON FEDERAL DENTAL SERVICES

The teaching of disaster casualty care technics in dental schools

Carl L. Sebelius, D.D.S., M.P.H., Nashville, Tenn.

In these days of frequent natural disasters and the threat of impending war catastrophes, it is an accepted principle that dentists should be trained to give broad casualty care in an emergency. This has been submitted to by the Federal Civil Defense Administration, the American Dental Association, and the health agencies. The reason for such training is the realization that in many major catastrophes there will not be enough medical practitioners and nurses available to care for those who need immediate attention. There is, then, an urgent need for medical auxiliary personnel to assist the medical and nursing professions in such emergencies. The 80,000 dentists of this country constitute an important pool from which such personnel may be recruited.

Dentists have a knowledge of the basic medical sciences; they know the anatomy and physiology of the body as a whole, and they are familiar with drugs and anesthetics. They are accustomed to handling patients in severe pain, but unless they have had some training they are unfamiliar with the management of injuries outside their specific field. During the war dentists in service were associated with the medical corps in the handling of the wounded, and many were closely allied with the medical officers in hospitals and in the field of combat. In fact, both on land and at sea, a dentist was in many instances the only casualty officer to care for large numbers of injured personnel. These dentists performed an outstanding service.

The average practicing dentist has had no actual experience in the treatment of body injuries, and, in the event his services were required either in a peacetime or war disaster, he would not be able to render efficient assistance in casualty care. If he had some training he could in an emergency readily adapt himself to the needs of the occasion. This is the rationale of the program of casualty care training that is being carried on in this country under the auspices of the American Dental Association and the Federal Civil Defense Administration. So important is this program that it is generally agreed that the first aid and emergency medical care technics should be incorporated in the dental school curriculum. If this were done in all schools each year, over 3,000 new graduates would have had this fundamental training. In time, practically all practitioners would be familiar with the basic principles of casualty care.

Recognizing the changing times, the Council on Dental Education has included a 16 hour course on first aid in the dental hygiene curriculum. Certainly dental students should have much more such training than dental hygienists. Casualty care training enlarges the horizon of the student and the practitioner; it affords him knowledge which will enable him to cooperate with physicians in the event of an accident or disaster, and when no medically trained personnel

Chairman, Subcommittee on Civil Defense, American Dental Association.

are available, he alone may render casualty service for the injured. This new concept of dentists participating in the care of body injuries appeals to the imagination of the student and the practitioner. It vitalizes the training they have had in the medical sciences and allows them to utilize the knowledge they have had outside the field of dentistry in an emergency. Such training is not confined to wartime attacks but also may be required for natural and peacetime disasters.

At the present time well organized courses in casualty care training are being given in several schools in this country. This instruction is of two general types. One program consists of Red Cross first aid training, followed by advanced casualty care given by medical practitioners and teachers. The other consists of a series of lectures and demonstrations on the specific forms of injuries, their nature and effects and the methods of immediate and definitive treatment. These, then, include the initial treatment of such injuries, transportation to first aid stations or hospitals and surgical or therapeutic care. This latter course is taught best by medical men who have had service in war surgery and in Korea. They speak from a wealth of experience and not from textbook knowledge. As a rule, teachers of this type may be found in the hospitals and medical schools associated with the dental schools.

Recently at Michigan a course of this second type, known as "Disaster Casualty Care," has been developed by the surgical department of the Medical School, under the direction of Dr. Fred Coller. The teaching staff and the development of the course has been organized by Dr. Lloyd Olsen, a senior instructor in the department. An outline of this course has been prepared by Dr. Olsen and is based on the course of instruction given to the students in the School of Dentistry. The course consists of 14 lectures and demonstrations by members of the surgical staff of the Medical School. It is given one hour per week for 14 weeks. It is illustrated by films showing the various types of injuries and methods of caring for them. Series of films are available through the Federal Civil Defense Administration. These films show demonstrations and actual practice in venipuncture, bandaging, splinting and other forms of casualty care.

The Federal Civil Defense Administration has issued a training manual entitled *Emergency Medical Treatment TM-11-8* that may be used as a textbook for undergraduate courses in dental schools on disaster casualty care. These courses should be given by members of the surgical staff of the associated medical school, preferably those who have had casualty care experience in Korea or in World War II.

For the past five years there has been a medical emergency national defense program which has replaced the R.O.T.C. program in five medical schools—Cornell, Buffalo, Illinois, Vanderbilt and California. This year the program has been extended to an additional ten medical schools. In the dental schools of the country, a recent survey conducted by Dr. Bunting reveals that in 11 dental schools first aid courses are being taught and in nine dental schools courses in emergency casualty care. Undoubtedly, other dental schools have similar courses in the planning stage or already under way. This type of training is of sufficient importance so that it should be included as a part of the dental curriculum in every school of dentistry. Its implications are far reaching, and in time such courses may lead to an entirely new concept of dental practice and experience.

BUREAU OF LIBRARY AND INDEXING SERVICE

Additions to the Library

The books listed here have been added recently to the Library collection. Requests for this material, available on loan to all members of the Association, should be addressed to the Bureau of Library and Indexing Service. There is no charge for borrowing books. Most of the books may be purchased also through the Library.

BOOKS

AMERICAN DENTAL ASSOCIATION. BUREAU OF LIBRARY AND INDEXING SERVICE. Index to dental literature, 1954. Chicago, The Association, 1955. 240 p. $10.

AMERICAN DENTAL ASSOCIATION. BUREAU OF LIBRARY AND INDEXING SERVICE. Index to dental literature, January-March, 1955. Chicago, The Association, 1955. 60 p.

AMERICAN MEDICAL ASSOCIATION. BUREAU OF HEALTH EDUCATION. Television in health education. Chicago, The Association, 1955. 38 p.

AMERICAN MEDICAL ASSOCIATION. BUREAU OF HEALTH EDUCATION. Television in medical education. Chicago, The Association, 1955. 96 p.

AUDIO-VISUAL EQUIPMENT DIRECTORY, edited by Edward F. Arendt. Evanston, National Audio-Visual Association, 1955. 179 p. $3.50.

BASSETT, D. L. A stereoscopic atlas of human anatomy. Sec. 2: Head and neck. Portland, Sawyer, 1954. $38.50 (set of 5 books).

BLACKWELL, R. E. G. V. Black's operative dentistry. v. 1: Pathology of the hard tissues of the teeth; oral diagnosis. v. 2: Technical procedures in making restorations in the teeth. 9th ed. South Milwaukee, Medico-Dental, 1955. $22.50.

BLANK, HARVEY & RAKE, GEOFFREY. Viral and rickettsial diseases of the skin, eye and mucous membranes of man. Boston, Little, Brown, 1955. 285 p. $8.50.

CLARK, C. J. Open wider, please; the story of dentistry in Oklahoma. Norman, Univ. of Oklahoma, 1955. 391 p. $5.

COELHO, D. H. & REISER, J. M. A complete fixed bridge procedure. New York, New York Univ. 1949. 129 p. $3.16.

CONN, H. F., ed. Current therapy 1955; latest approved methods of treatment for the practicing physician. Philadelphia, Saunders, 1955. 692 p.

DAUGHERTY, C. R. & PARRISH, J. B. The labor problems of American society. New York, Houghton, 1952. 846 p. $6.

DAVIS, M. M. Medical care for tomorrow. New York, Harper, 1955. 497 p. $6.50.

DE LORIMIER, A. A., MOEHRING, H. G. & HANNAN, J. R. Clinical roentgenology. v. 2: The head, neck and spinal column. Springfield, Thomas, 1954. 464 p. $18.50.

DUNBAR, FLANDERS. Mind and body: psychosomatic medicine. new enl. ed. New York, Random House, 1955. 298 p. $3.50.

FOOTE, F. W. & FRAZELL, E. L. Tumors of the major salivary glands (Atlas of tumor pathology sec. IV-fasc. 11) Washington, Armed Forces Institute of Pathology, 1954. 149 p. $1.50.

FÖRTECKNING ÖVER SVENSKA LÄKARE OCH TANDLÄKARE. (Directory of Swedish physicians and dentists) Stockholm, Royal Medicine Bureau, 1954. 771 p. $1.60.

HARDMAN, J. B. & NEUFELD, M. F., ed. The house of labor; internal operations of American unions. New York, Prentice-Hall, 1951. 555 p. $5.75.

HOTZ, R. Orthodontie in der täglichen Praxis. Bern, Verlag Hans Huber, 1954.

KOLLER, K. C. Zahnersatz durch Kronen, Brücken und partielle Prosthesen. Vienna, Maudrich, 1954. 582 p. $20.

LEMPERLE-FRANZMEYER, DITA. Leitfaden der Kieferorthopädie für den prakt. Zahnarzt. 2d ed. Konstanz, Zahnärztliche Welt, 1950. 134 p.

MCCOLLUM, B. B. & STUART, C. E. A research report; basic text for the post-graduate course in gnathology, School of Dentistry, University of Southern California. South Pasadena, Scientific Press, 1955. 123 p. $2.50.

MCLEAN, F. C. & URIST, M. R. Bone; an introduction to the physiology of skeletal tissue. Chicago, Univ. of Chicago, 1955. 182 p. $6.

MYERS, J. M. Doc Holliday. Boston, Little, Brown, 1955. 287 p. $4.50.

PERMAR, DOROTHY. A manual of oral embryology and microscopic anatomy. Philadelphia, Lea & Febiger, 1955. 109 p. $3.

POLETTI, I. B. De re dentaria apud veteres. 2d ed. Milan, Bononiae, 1951. 214 p. $7.

REYNOLDS, L. G. Labor economics and labor relations. 2d ed. New York, Prentice-Hall, 1954. 722 p. $6.50.

SOCIÉTÉ SUISSE D'ODONTOLOGIE. Combattons la carie dentaire. Berne, The Society, 1954. 15 p.

STOUT, A. P. Tumors of the soft tissues. (Atlas of tumor pathology, sec. II-fasc. 5) Washington, Armed Forces Institute of Pathology, 1953. 138 p. $2.

TABER, C. L. Taber's cyclopedic medical dictionary including a digest of medical subjects: medicine, surgery, nursing, dietetics, physical therapy. 6th ed. Philadelphia, Davis, various paging. $4.75.

TRAPOZZANO, V. R. A comprehensive review of dentistry. 2d ed. Philadelphia, Saunders, 1955. 665 p. $8.

WILLIAMSON, S. T. & HARRIS, HERBERT, ed. Trends in collective bargaining; a summary of recent experience. New York, Twentieth Century Fund, 1945. 254 p. $2.

TRECKER, A. R. & TRECKER, H. B. Committee common sense. New York, Whiteside, 1954. 158 p. $2.50.

U. S. CONGRESS. COMMITTEE TO INVESTIGATE USE OF CHEMICALS IN FOODS AND COSMETICS. Delaney report on fluoridation of drinking water. Washington, Govt. Print. Off., 1953. 10 p. $.05.

U. S. DEPT. OF LABOR. Brief history of the American labor movement. Washington, Govt. Print. Off., 1951. 66 p. free.

COUNCIL ON DENTAL RESEARCH

Additions to list of certified dental materials

Since the publication of the most recently revised List of Certified Dental Materials (revised to December 15, 1954), the following materials which conform to American Dental Association Specification No. 5 for Inlay Casting Golds have been added.

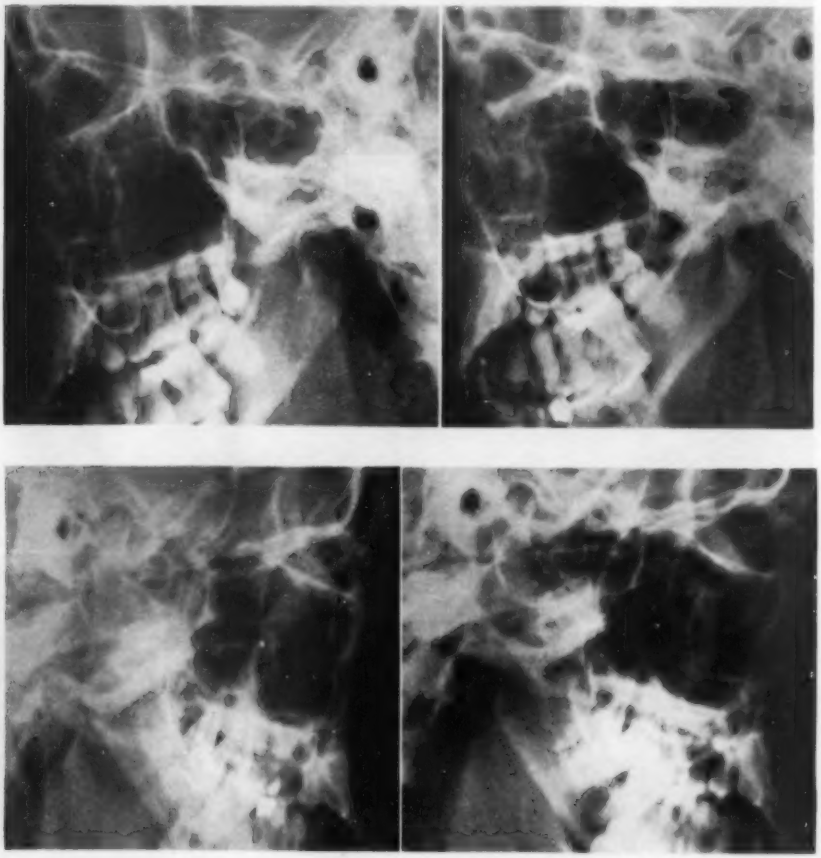
CERTIFIED INLAY CASTING GOLD ALLOYS (A.D.A. SPECIFICATION NO. 5)

Alloy	*Type*	*Manufacturer or distributor*
Mowrey S-M	A, Soft	W. E. Mowrey Co.
Mowrey T	B, Medium	W. E. Mowrey Co.
Mowrey TT	C, Hard	W. E. Mowrey Co.

CLOSING THE BITE

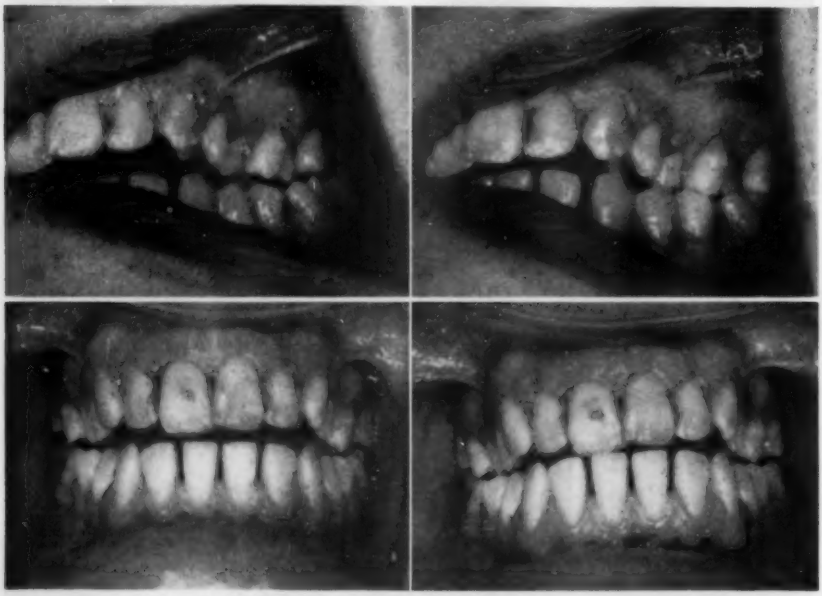
By Sidney Sorrin, D.D.S., New York.

In recent years there has been much progress in the study of mouth rehabilitation, particularly in those cases which require an opening of the bite or an increase in vertical height during the process of mouth reconstruction. Much can be said for and against the methods and results which have been obtained in the process of mouth rehabilitation. However, where it is definitely required, the patients have been helped considerably from a functional and esthetic viewpoint.



Above: Position of right condyle in the fossa before and after treatment. Below: Position of left condyle before and after treatment. (Condyle photos courtesy of Sidney Riesner)

Amount of contact of anterior and posterior teeth before and after grinding, teeth in centric occlusion



Amount of contact of anterior and posterior teeth before and after grinding. Above: Teeth in centric occlusion. Below: Jaws in protrusive position

The case reported in this article is one in which closing of the bite was advised. Closure of the bite is a most difficult procedure because it requires the grinding of every surface of the posterior teeth, as all movements of the jaw must be considered in planning this therapy.

The patient, a young lady, 24 years of age, complained of pain and loss of hearing particularly in the region of the left ear and complained also of temporomandibular joint clicking. The periodontal disturbance was mild and of an incipient nature. Nonocclusion of the central incisors, lateral incisors, cuspids and bicuspids was observed when the teeth were in centric occlusion and in protrusive excursion and position. The nonocclusion allowed a tongue habit to cause separation between the lower teeth. Orthodontic treatment was suggested, but was refused by the patient who was reluctant to have any orthodontic appliances in her mouth.

After casts were made, complete roentgenographic series and record charts were taken. Condyle pictures were made stereoscopically, and evidence indicated that bite closure might aid in relieving the patient of the symptoms. Most of the contact took place on the upper left second and third molar teeth and right second and third molar teeth.

Two factors were considered; first, the amount of tooth structure which could be removed without inducing sensitivity and without interfering with esthetics and phonetics, and second, the amount of grinding which would allow more teeth to be in simultaneous contact.

The pictures show the amount of nonocclusion which was present, and the amount of grinding which was possible without causing discomfort. After treatment symptoms subsided. It is now over five years since treatment was undertaken, and the patient continues to be most comfortable. The limit of grinding was reached, and the condyle relationships were improved. The condyles are deeper in the fossa, which would indicate a reduction of the dimension. Further reduction by grinding would settle the joints too deeply. The remaining correction of the anterior teeth should be attempted orthodontically to elongate the incisors.

745 Fifth Avenue

Associate professor of periodontics, New York University College of Dentistry; periodontist, Montefiore Hospital.

Modern Explorers • Our scientists are our modern explorers, pushing back the frontiers of the "land of knowledge." This is a land not on this earth or in the heavens above, but composed of them and of the minds of men. It is a limitless land fraught with difficulties for the explorers. Towering mountains, rushing torrents, arid deserts, pestilent swamps, and tangled jungles must be penetrated and conquered. Unforeseeable riches in well-being and material comfort are to be found. Perhaps even the "fountain of youth." *Ward Pigman, "Wanted: More Ivory Towers," The Scientific Monthly 80:255 April 1955.*

The Reader Comments

THE JOURNAL *devotes this section to comment by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. At the request of the author, signatures will be deleted before publication. Printed communications do not necessarily reflect the opinion or official policy of the Association. Your participation in this section is invited.*

The Editor

ON GIVING ADVICE ON NUTRITION

An editorial entitled "Some Advice on Giving Advice on Nutrition" appears in the December 1954 issue of THE JOURNAL. I find that my views differ with some of the statements made in the editorial.

It would seem appropriate to slant some of the diatribes contained in the editorial not towards the few food faddists in our profession but towards the mass preachments cloaked in respectable garb that mesmerize our future generations.

Overeating and obesity are currently the number one dietary and nutrition problem in this country. I know of no instance in which a food company is encouraging reduction of food consumption. Their one concession to the recognition of the problem of obesity is their claim that their particular product is low in calories. They infer that it can be consumed in unlimited quantities without adding weight.

The most outrageous practice is the one perpetrated by a group of food companies on children. The television announcer staring straight at the young child, with the product held high in the air, delivers his commercial. He literally orders the child to run straight to the store to buy the product or, more subtly, urges the child to exert pressure on his unsuspecting mother. How many children can resist, fearful that they will not be socially acceptable or will not grow up to be big and strong unless they consume the product? An alternative "gimmick" is the usually worthless trinket advertised for a small charge plus a box top of a certain product. In such cases, the pressure on the parent through the child reaches an almost uncontrollable pitch, as the sponsor well knows.

It may be true that "there are many blanks in nutritional knowledge." It is true also that available knowledge concerning the cause of periodontal disease and decay contains many more blanks. Yet, we treat periodontal conditions every day and perform excellent services for our patients. Our attitude should encompass not only correction of disease but prevention as well.

In the November 1954 issue of the *Journal of Dental Education*, J. C. Muhler in an article entitled "Survey of Status of Biochemistry in the Dental School Curricula" states, "Experience has adequately demonstrated that in the practiced principles of nutrition, considerable amounts of periodontal and dental caries can be prevented. This fact alone seems to justify the inclusion of nutrition as a separate course in the dental curriculum."

Your editorial states that "When suggestive oral lesions are present it is desirable for the dentist to seek cooperation of the physician since the possible malnutrition may also involve conditions requiring medical treatment." No one objects to cooperating with the physician. However, if the patient has no apparent complicating medical problem, then the dentist is in a dilemma. Shall he refer the patient to a stomatologist or to a pathologist or to a dermatologist? Nutrition is not the exclusive property of any one specialty but seems, for the present, to be inadequately handled by all the specialties. Enough information exists to make possible the treatment of nutritional deficiencies. It is up to the dentist to keep himself informed of the latest aspects of nutrition.

There may be dentists who abuse the use of nutritional supplements just as there may be dentists who prescribe antibiotics indiscriminately. Our patients, however, would derive greater benefits if we dentists, rather than some ill-informed laymen, would give dietary advice.

Harry Roth, New York

O.A.S.I. NOT SOMETHING FOR NOTHING

The April *Journal of the Florida State Dental Society* has an article by me explaining the objections to inclusion of the dental profession in compulsory coverage under social security. I wish to summarize this article for readers of THE JOURNAL. Social security is part and parcel of what is known as "creeping socialism." Voluntary coverage, to which I have no objection, is not feasible according to a representative of the Social Security Administration.

It is true that a large percentage of our population lacks the management ability to provide for retirement. I like to imagine myself and the rest of the profession as a grade or two above that segment of our population. In addition, social security is a disguised income tax.

Social security funds are not being conserved by the government to pay benefits. The government has perpetrated a big fraud on our citizens. When future benefits are to be paid they will be paid with new and additional taxes. I am opposed to government paternalism. Private insurance plans do not say that I may not receive payments if I earn more than a mere pittance.

A very high percentage of our law-makers are attorneys. Yet the law profession has been excluded from social security coverage. Most of us seek advice from our attorneys. If the law-makers thought O.A.S.I. good enough for the legal profession, I might think it good enough for the dental profession.

I have summarized my article here because I believe that if dentists were informed instead of propagandized as they have been from Washington, a substantial majority would continue to oppose coverage. This is a small effort to so inform them.

A lot of our colleagues are rising to the same old bait, namely, something for nothing or a lot for a little. This economic impossibility must be recognized before it is too late. Remember how this bait was used to almost foist state medicine and dentistry on us a few years ago?

A few days ago I had a letter from Dr. Hyde of Minneapolis, editor of *North-West Dentistry*, complimenting me on the article in the Florida journal. Among other things he said, "Two visits to Britain in the last three years make me think I know something about what politicians can do to professional men. It certainly is 'creeping socialism,' and once you are in you cannot get out and what can you say when government medicine and dentistry are proposed?"

A supine do-nothing attitude certainly will get us into the racket, whereas an aggressive educational effort in our profession still has a chance to retain for us the privilege of staying out.

Carl F. Damerow, Vero Beach, Fla.

DENTISTS AND KOREA

I have read the April editorial "Dentists Invited to Join American Korean Foundation." I am pleased to see the American Dental Association taking an active interest in a dental program for Korea.

Last year the United States spent 534 million dollars for Korean relief. At the present time, several agencies are directly concerned with the reconstruction and rehabilitation of Korea. A lot of money is allotted to the health services. For example, the Taegu Medical School received $1,500,000 for the improvement of its facilities. A portion of the money spent could be allotted to dental health if dental personnel were in these administrative positions.

Hundreds of persons in medicine and pharmacy have been sent to the U.S. to study for three months to one year. Of this number, only four have been dentists. No dentist serves as a member of the student selection committee.

It is imperative that dentists be active in the agencies that are concerned with these problems. The present problem could be met in part by the assignment of qualified U.S. Dental Corps personnel to full-time positions with these agencies.

I have recently returned from Korea as a member of the Korean Military Advisory Group. I hope I can be of some assistance in dental programs for Korea.

Robert M. Booth, Springfield, Ill.

JUNE 1955

LON W. MORREY, D.D.S., EDITOR
VOLUME 50 • NUMBER 6
Published by the American Dental Association
222 East Superior Street • Chicago 11, Illinois

THE Journal OF THE AMERICAN DENTAL ASSOCIATION

Editorials

New abstract journal to make world dental literature available to all dentists

By this time each member of the American Dental Association will have received his formal invitation to become a charter subscriber to DENTAL ABSTRACTS, the newest publication of the Association.

DENTAL ABSTRACTS will make its appearance January 1956. It will be issued monthly and each number will contain approximately one hundred succinct summaries of articles appearing in the current dental literature of the world. DENTAL ABSTRACTS will enable the reader to keep abreast of the many and varied developments taking place in dentistry—not only in the United States but throughout the world. More than one hundred dental journals published abroad in more than a score of countries plus several hundred dental and allied journals in the English language will be scanned regularly to make possible this service to subscribers.

DENTAL ABSTRACTS is the Association's answer to a rapidly growing demand by practitioners, researchers, educators and others, for a journal of this type. Heeding that demand, the House of Delegates last November authorized its publication.

Dental science, including its seven recognized specialties, has become so complex and the volume of its literature, published in the world's various languages, has grown so great that it is impossible for any dentist—even the most accomplished linguist—to keep abreast of all developments in his profession. The Association, by means of DENTAL ABSTRACTS, proposes to reduce the magnitude of that problem. Items in the new publication will consist of summaries of selected original articles.

They will note new apparatus and new operative technics, point up new observations by researchers, or present briefs of new surgical and therapeutic treatments. Each abstract will be complete and intelligible to the reader without reference to the original paper. It will supply enough information so that the reader may determine whether he wishes to refer to the original article for more complete details. DENTAL ABSTRACTS will be so organized and indexed that the reader with special interests can quickly find those items in which he is especially interested.

DENTAL ABSTRACTS will help the dentist direct his reading time and energy intelligently and profitably. It will be a valuable working tool for all the profession, enriching the knowledge of the researcher, the teacher, the specialist and the general practitioner.

In entering the abstract field, dentistry is not launching a literary innovation. It is simply—perhaps belatedly—following an example long since set by other scientific bodies. Almost every profession and almost every science now has an abstract journal covering the world's literature in its specific field: *Chemical Abstracts, Biological Abstracts, Nutrition Abstracts, Psychological Abstracts* and *Abstracts of Medical Science,* to cite a few examples.

Some of these comparable publications in other scientific fields cost up to fifty dollars a year. DENTAL ABSTRACTS' annual subscription price of six dollars is indeed modest. Dentists here and abroad can help themselves as well as the profession by entering their subscription now.

Delegates' responsibility to members not unilateral

So many claims and counterclaims have been made of late regarding the benefits that may accrue to dentists and their dependents should dentistry be included in the Old Age and Survivors Insurance Program of the Social Security Act that most busy practitioners approach—and leave—the subject in a state of confusion. For the purpose of dissolving some of that confusion, the report of the Council on Legislation published on pages 686 to 693 of this issue is recommended for reading.

Ever since the House of Delegates, last November, reaffirmed its opposition to the inclusion of dentists in O.A.S.I., the volume of objections against the decision has increased by several decibels. Of this there can be no criticism as the right to protest is in accord with democratic principles. It is unfortunate, however, that some protesters attempt to shift the responsibility for this House action from the shoulders of the membership, where it rightfully belongs, to the shoulders of the officers and trustees. The Constitution and Bylaws of the Association places the power of the organization in the hands of the members. The members delegate this power to the House of Delegates, a body which, representing the members, decides the policies of the Association.

Although most members recognize that their delegates or representatives have a definite responsibility to their constituents, some members fail to realize that they,

themselves, have a responsibility to their representatives—the responsibility of making their opinions known to their delegates so that those agents can represent them intelligently. If this fact were better understood there would be far fewer postdecisional recriminations.

In discussing this problem, which seems to be as common in Britain as it is in America, *The Journal of the British Dental Association*[1] makes this pointed observation:

> Majorities are not always right but no other method than majority rule appeals to most people in this country, and if the majority is sometimes wrong, it is doubtless so less often than minorities would be if they had the responsibilities of action. Of recent times there have been clamourings from certain members of the profession about this and that, and wild assertions and accusations have been flung indiscriminately, heedless of accuracy and careless of harm to the profession. If there had been any substance in the statements made, or any general support for them, then the recent elections would have resulted in a very different Board.
>
> It is of interest to note that very little, if any, serious attempt has been made by these iconoclasts to advance their views in the Branches [constituent societies], and this must be due either to the fact that they believe that informed opinion would reject them, or else, believing them to be unacceptable, they prefer the delights of office in a smaller irresponsible group to absorption in a larger organisation which can speak and act only in a responsible manner.
>
> Members of the Board [House of Delegates] have a duty to those who elected them, but this also applies in reverse; constituents have a duty to their representatives. They have the duty of asking them questions, of expressing opinions on their actions, of advancing arguments for certain lines of policy, of passing reasoned comment favourable or otherwise. It is grossly unfair to choose a representative to put a point of view and then not to keep him informed of what the current viewpoint is. The members of the Board [House] can express the will of the members of the Association only if constituents keep in close touch with those whom they elect.
>
> It is through the Representative Board [House of Delegates] that the membership can guide the affairs of the profession. The Board [House] as a whole decides policy and chooses those whom it considers most able to work out the details of that policy in committee. This is a distribution of authority in which every member of the Association can play his part; splinter groups and self-elected apostles crying in the wilderness can produce only anarchy.

1. The new Representative Board. Editorial. Brit. D. J. 98:127 Feb. 15, 1955.

Association voices opposition to extension of special dentist-physician draft law

The nation's eighty-fourth Congress is about to close its first session. Reliable Washington observers predict that for the next few weeks national lawmakers will do little more than go through perfunctory motions of legislating and debating and will add few major laws to the books. Whether that prediction is correct and whether it will apply to the special dentist-physician draft bill (H.R. 2886), time alone will tell. It is hoped, however, that the Association's strong opposition to the bill will help increase the reputation of the nation's forecasters.

Testifying before the Committee on Armed Services of the House of Representatives, April 28, representatives of the Council on Legislation of the Association explained why the extension of this act at this time is both unwise and unrealistic. The text of the Council's testimony is published on pages 694 to 698 of this issue.

In voicing the Association's opposition to the extension of the dentist-physician draft act, the representatives of the Council on Legislation reminded the legislators that the Association heartily supported the original enactment of Public Law 779 in 1950 and did not oppose its extension in 1952 because of the Korean situation. Reluctantly the Association supported another two year extension of the law in 1953 though gravely doubting its need and desirability.

Since then a number of wholesome events have transpired which strengthen the conviction that further extension of the act is unwarranted. The Armed Forces has been reduced from some 3,600,000 in 1953 to slightly more than 3,000,000 today and, if the President's reported plans are put into effect, they will be further reduced to some 2,850,000 by July of next year. The cold war in Europe is less frigid and tensions in the Far East are less severe. At home the potentials of military dental manpower have definitely improved. Both the annual number of dental graduates and the number liable for military service continue to rise. Based on a ratio of 1.9 dental officers per one thousand men, the military estimates it needs but 1,579 dentists for fiscal year 1956. Of these, 1,500 are available from the current graduating class. Of the 1,946 dental officers needed for fiscal 1957, at least 1,900 should be available from next year's graduating class. No expert in higher mathematics is needed to determine from these figures, compiled by the Department of Defense, that essentially all of the military's dental officer needs can be satisfied from the annual dental graduate group. If the present ratio of 1.9 dentists to 1,000 men is reduced to 1.7 as recommended by the Association, a ratio which prevailed during the Korean conflict, the number of current dental graduates liable for military service will more than fill the Forces' requirements and will preclude the induction of middle-aged dentists as is now being done.

Although the Association vigorously opposes the extension of the special dentist-physician draft bill for the reasons stated here and for others recorded in the testimony presented before the Committee on Armed Services, it just as vigorously advocates that the quality of dental service provided the Armed Forces be maintained on its present high level and improved wherever possible. To attain both of these objectives, the Association will bend its every effort.

Washington News Letter

On Capitol Hill, all signs point to another two-year extension of the doctor-draft law. The House probably will have passed the enabling bill before this letter reaches print, and Senate concurrence in June is regarded as likely. The Department of Defense argued that it could not meet its requirements for dentists and physicians next year without the instrumentality of a special draft, and so Congress will reluctantly give the authority, despite opposition by the American Dental Association and the A.M.A.

However, the Department of Defense did not gain its point on establishment of a scholarship program for dentists and physicians. The House Armed Services Committee, after hearings, rejected this idea mainly on the grounds of cost. Opposition to the measure was led by Rep. F. Edward Hebert, D., La., who held it to be impractical to spend large sums on a plan that would not produce a net increase in the output of dentists or physicians.

The likelihood is that the draft extension bill to be sent to the White House for signature this month will provide: (1) that existing law be kept in effect until June 30, 1957; (2) that the present system of four priorities be retained; (3) that no special registrant past age 35 be liable for induction if previously he has been turned down for a commission solely on grounds of physical disability, and (4) that the $100 extra monthly pay for military physicians, dentists and veterinarians be extended to June 30, 1959.

The Department of Defense had recommended that the $100 extra pay be withheld from doctors subject to the regular draft law (as well as to the special draft) who did not agree to serve an extra year in uniform. This restriction would have become effective on July 1. The American Dental Association voiced strong objection to this discriminatory clause, and it was abandoned.

SURPLUS PROPERTY

Increasing amounts of federal surplus property are becoming available for donation to public and tax-exempt health and educational institutions and agencies. Allocations under supervision of the Department of Health, Education and Welfare are running in excess of 13 million dollars a month, with schools of dentistry and dental public health activities among the recipients.

The Surplus Property Utilization Division in the Department of Health, Education and Welfare estimates that its volume of distribution for the year ending June 30, 1955, will exceed 150 million dollars. About 90 per cent will be in personal property, ranging from textbooks to dental chairs, the remainder in real property.

Eligible nonprofit institutions desiring to apply for surplus property should request the necessary forms from the state authorities which make the actual allocations or from regional offices of the Department of Health, Education and Welfare. Information may be obtained also by communicating with the Surplus Property Utilization Division in the Department of Health, Education and Welfare, Washington 25, D. C.

VA DENTAL ACTIVITIES

The annual report of the Veterans Administration, covering fiscal year ending June 30, 1954, was published recently. In the field of dental care, it cites a considerable decrease in outpatient services resulting from Congressional restrictions on

eligibility and reports increased emphasis on postgraduate-type training opportunities for VA dentists. The report says:

> The need for routine integration of oral diagnosis with the over-all diagnostic procedure is particularly required in VA hospitals, where treatment planning usually follows the admission of the patient, in contrast with the procedure in civilian practice, where treatment planning ordinarily precedes hospitalization.
>
> The role which dentistry can play in early diagnosis and preventive measures is being recognized more and more in civilian practice. Furthermore, good preventive medicine pays dividends in relation to future hospital costs.
>
> The Department of Medicine and Surgery, although cognizant of dentistry's role in the hospital program, found it difficult during fiscal year 1954 to provide dental staffs of sufficient size and adequate supporting personnel to obtain the complete benefits that dentistry is capable of rendering to the hospitalized patient. However, with the stabilization and reduction of the scope of outpatient dental activities, it should be possible to improve the dental phase of hospital activities.

During the 1954 fiscal year, VA dentists gave examinations to 272,000 patients and treatments to 127,000 in hospitals or domiciliary homes.

In the outpatient program, examinations totaled 278,646, of which 155,476 were by VA staff dentists and 123,170 by private practitioners participating in the "home-town" dental care program. Treatments totaled 302,720—all but 57,086 of them handled by private dentists on a fee basis. Charges averaged $99.52 per patient.

The 1955 fiscal year, now drawing to a close, is expected to show an appreciable drop in the volume of outpatient dental services. In February of this year, the latest month for which figures are available, dental examinations totaled 14,152, compared with 22,107 in the same month of 1954. There were 12,328 treatments, or little more than one-half the number in February 1954.

Fee-basis dental services have declined steadily since the peak year of 1948, when 602,617 treatments were completed at a cost to the government of approximately 45 million dollars. Fee-basis examinations completed in the same year totaled 420,627, for an additional expenditure in excess of 5 million dollars.

International Correspondence

NEWS FROM GREAT BRITAIN

It is proper that in a news letter from Great Britain tribute be paid to Sir Alexander Fleming, M.D., the discoverer of penicillin, who died recently. Sir E. Wilfred Fish was on the staff at St. Mary's hospital with Dr. Fleming for many years and writes of his famed colleague as follows.

Since our last letter, not only the Royal College of Surgeons but British medicine and the whole world have lost one of the most illustrious men of all time. Sir Alexander Fleming, by his discovery of penicillin, opened up the field of antibiotic therapy and turned a new page in medical history. Many of our American colleagues must have met him and found him, as we all knew him to be, the most friendly and unassuming of men, yet possessing a natural dignity and force of character developed by constant contact with science.

It had been his original intention to become a surgeon, and he underwent the severe discipline of acquiring the Fellowship of the Royal College of Surgeons; but his contact with Sir Almroth Wright, at the time when Wright was carrying out the work which culminated in the discovery of inoculation against typhoid, attracted him to the study of immunity. Surgery was discarded.

Fleming was a brilliant student and could have made his mark in any branch of medicine. His work on war wounds in the first world war paved the way for his discovery of penicillin. Of special interest to dental surgeons is his discovery of lysozym and his famous experiments to show that ordinary disinfectants damaged the defense mechanism more than they damaged the bacteria. At last his search was rewarded, though for a number of years the use of penicillin was restricted to the laboratory. It remained so until Sir Howard Florey of Oxford and Dr. Chain made it available for injection into the body.

Fleming was 73 when he died March 11. He had just retired from the direction of the Wright-Fleming Institute. His ashes are preserved in the crypt of St. Paul's Cathedral, where lie the remains of many of our most famous men. His name is inscribed in the Roll of Our Illustrious Dead.

REMUNERATION FOR DENTISTS

Both Jack Gilbert, writing of the National Health Service, and Stewart Ross of the British Dental Association report on current government action.

The British Dental Association, on behalf of practitioners working in the General Dental Service of the National Health Service, has made many requests for the removal of an over-all cut of 10 per cent of dental fees. This deduction was applied arbitrarily in 1950. Probably four fifths of the profession in England, Scotland, Wales and Northern Ireland have been affected.

Official enquiries into practice expenses, the time required to perform the various operations of dental treatment, the actual incomes of practitioners in the National Health Service and many other details have been studied at length for several years. All this investigation had been without result until, at the annual conference of local dental committees held in London April 1, the Minister of Health made an official pronouncement that he would, subject to certain provisions, abolish the 10 per cent cut at "an early date."

The conditions the Minister laid down were that the abolition of the cut and the recasting of the scale of fees for treatment should be dealt with together as a reassessment of dental remuneration, and that this result should be accepted by the profession as a full settlement of dental remuneration "at the present time." A special meeting of the Representative Board of the British Dental Association was called March 31 to discuss these proposals.

The Representative Board agreed to accept the Minister's offer, in spite of the fact that by so doing it would be abandoning the Association's claim, which has been put forward for many years, that the general remuneration should be higher and comparable to that laid down in the recommendations made by the Spens Committee that the average net income should be £2,200.

To have rejected the offer, however, probably would have been unwise, since the restoration has been awaited eagerly. The cut will be abolished May 1, 1955.

MANPOWER PROBLEM

The number of students entering the dental schools is still unsatisfactory, reports Prof. H. H. Stones. The entries in the last three years were as follows: 1952, 508; 1953, 459; 1954, 539. These figures include students residing overseas, a number about 10 per cent of the total. Hence the numbers still fall far short of the 900 that was recommended in 1946 in the final report of the interdepartmental committee on dentistry.

This unsatisfactory state of affairs is causing national concern, with the result that the Minister of Health in December 1954 announced that he was setting up an interdepartmental committee on recruitment "to ascertain the reason for the lack of candidates of suitable calibre for training as dentists and to indicate possible directions in which remedies might be sought." The committee is to have a distinguished lay chairman and, in addition, will consist of five dentists and five laymen.

Representing dentistry will be one representative from the Dental Board of the United Kingdom, one from the Dental Education Advisory Council of Great Britain and Ireland and the dental faculties combined, and three from the British Dental Association, one of whom will represent professional interests in Scotland.

The various interested bodies are collecting evidence to lay before the committee. The Dental Board has arranged for representatives to visit schools for boys and girls. They will talk to the head teacher or the one responsible for advice on careers, certain groups of pupils and parents. The universities are being visited, and groups of newly enrolled students in dentistry, medicine and science are being interviewed. Similarly, visits are being paid to dentists.

The Dental Education Advisory Council will present a report expressing the opinion of the dental schools. The British Dental Association is sending a questionnaire to 2,500 members. This much evidence will be available for the Interdepartmental Committee.

It is an interesting thought that, as there are approximately 15,000 dentists on the Register, if one dentist in every ten years obtained one recruit, this approach alone would bring the number to 1,500 a year, which is nearly three times the present number.

ITEMS OF INTEREST

On March 25 Prof. R. V. Bradlaw, dean of the Sutherland Dental School, Newcastle, gave a Hunterian lecture at the Royal College of Surgeons, England, entitled "De cute oris." This proved to be a brilliant lecture, beautifully illustrated with fine color slides.

Prof. A. B. MacGregor, director, Birmingham University Dental School, has been appointed Charles Tomes lecturer for 1955.

The Royal College of Surgeons of England granted licenses in dental surgery to 63 candidates in March.

The Board of Faculty of Dental Surgery in its report on the fluoridation of domestic water supplies in the control of dental caries stated: (1) The board is satisfied that the incidence of dental caries is much less among children and adults who have spent the whole of their prenatal and postnatal life in regions where the drinking water naturally contains fluoride at a level of one part per million or more than it is among persons in regions where the water is practically free from fluoride; (2) There is no scientific evidence of toxicity or of harmful effects in districts where the water supply is fluoridated at this level; (3) The board considers that there is strong evidence in support of fluoridation and welcomes the proposal that this procedure be adopted in selected districts that can be used as study centers.

There is great appreciation in Great Britain of the offer of the United States Information Service to lend from its library through the office of the Naval Attache, U.S. Embassy, films on dentistry and dental health education. The films cover a wide field, and without doubt they will be borrowed extensively by branches and sections of the British Dental Association.

At the 75th annual conference of the British Dental Association to be held in Glasgow July 4-8, 1955, the Hunterian Museum and Library at the University, Gilmore-hill, will be open without charge. This center is rich in relics of Hunter and other historical items. Visitors from overseas are welcome.

Gerald H. Leatherman,
D.M.D., F.D.S.R.C.S.

Association Affairs

HOUSE COMMITTEE APPROVES DOCTOR DRAFT ACT

Over the opposition of the American Dental Association and the American Medical Association, the House Armed Services Committee voted 24-0 on May 10 to extend for two years the dentist-physician special draft act. The measure, which now goes to the House, continues until mid-1957 the present law making physicians and dentists subject to military service until they are 51 years old. Eliminated from the bill was a provision, supported in principle by the Association, to set up federally-financed medical and dental scholarships. However, the bill does provide for extension of the $100 special monthly pay to dentists in line with the recommendation of the Association.

In testimony presented April 28 before the House committee, J. Claude Earnest, vice-chairman of the Council on Legislation, scored the Department of Defense for its "waste of dental manpower."

"Perhaps the most compelling lack of justification for continuing the special liability of dentists who are not liable as regular Selective Service registrants is the manner in which the Doctor Draft Law has been used," Dr. Earnest said. "The Armed Forces will make no serious efforts to adjust realistically their dental programs and dental personnel requirements so long as they have the present special draft law for obtaining replacements."

Dr. Earnest told the Congressmen of the recent instance in which 1955 dental graduates had been denied assurance of immediate admission to active duty after graduation while older men are being called up.

He pointed out also that the present ratio of 1.9 dentists per 1,000 troops was a ratio higher than that in effect during the Korean war when it was only about 1.7. He reminded the Congressmen that the Hoover Commission's Task Force on Medical Services in February of this year had recommended a 1.7 ratio and had recommended as well abolition of the special draft.

Even with the 1.9 ratio, Dr. Earnest said, Department of Defense figures "illustrate that substantially all of the military's need for dental officers during the next two fiscal years can be satisfied from the dental graduate group with basic Selective Service liability."

The full text of Dr. Earnest's testimony begins on page 694 of THE JOURNAL.

URGE FEDERAL FUNDS FOR DENTAL SCHOOLS

A five year, 50 million dollar matching grant program for construction and expansion of dental and dental hygiene schools was recommended to the nation's law makers May 6 by Ralph E. Creig of Cleveland, a member of the Association's Council on Legislation. Dr. Creig proposed that such a program be incorporated in S. 1323, then being studied by the Senate Committee on Labor and Public Welfare. S. 1323 authorizes a system of matching grants for construction and expansion of medical schools.

Dr. Creig testified also on Part E. of S. 434, designed to help medical and nursing schools meet the costs of instruction and other operating costs.

"The progressively increased demand for dental care coupled with the rapid

growth of this nation's population make it imperative that the supply of dentists and dental auxiliary personnel keep pace with that demand and growth," Dr. Creig said. In explaining the needs of the dental schools, Dr. Creig cited a 1952 survey which revealed that the median basic operating expense for each dental student was at least $800 more than tuition charges.

Testifying on behalf of the Association also was Shailer Peterson, secretary of the Council on Dental Education. Dr. Peterson reported that according to a 1955 survey the dental schools needed 40 million dollars immediately and would need an additional 60 million dollars during the next five years.

"There appears to be an adequate supply of qualified applicants for both dental and dental hygiene training," Dr. Peterson said. "It is reasonable to expect that a source of federal grants . . . may stimulate a further increase in the number of new schools."

Construction proceeds on the Association building. Shortly after this picture was taken on May 1, concrete was poured, and the steel girders began to rise.

FIRST SUBSCRIPTION IN FOR NEW ABSTRACT JOURNAL

On May 4 the first subscription to DENTAL ABSTRACTS, the new journal of abstracts from the world dental literature, was received in the Association's Central Office. It came from Maurice N. Stern, editor of the Tenth District Dental Society Bulletin, Forest Hills, N.Y.

The first issue of the new publication, the only one of its kind in the dental field, is scheduled for January 1956. The subscription rate is six dollars for domestic readers; seven dollars for subscribers from abroad.

DENTAL ABSTRACTS will contain summaries from English language journals and will abstract also from articles printed originally in German, French, Swedish, Italian and Spanish. In commenting on the launching of the publication, Lon W. Morrey, Association editor, said, "This is an unequaled opportunity for the practicing dentist to have at his fingertips the latest developments in dental science and dental practice from all over the world." The editor pointed out that nearly 2,000 dental articles are published throughout the world each month.

"It is impossible for anyone to keep abreast of all the important contributions to the literature," Dr. Morrey said. "Thus, by providing in a short reading period each month a survey of dental progress throughout the world, DENTAL ABSTRACTS will provide the answer to a long-standing need."

INCREASE RESEARCH FUNDS LEGISLATORS URGED

Appropriation of one million dollars for the dental research grants program of the National Institute of Dental Research and $250,000 for its fellowship training program was urged by Association representatives last month. Testifying before the Senate Appropriations Subcommittee, which was considering dental research appropriations contained

in H.R. 5046, were Floyd W. Pillars, a member of the Council on Legislation, and H. Trendley Dean, secretary of the Council on Dental Research.

The sum of $421,000 proposed in H.R. 5046 for the research grant program of the Institute will allow it to accept only 15 to 20 new projects a year, Dr. Pillars pointed out. Three times this number of worthy applications will be received each year for projects to be carried out in dental schools and in other nongovernmental facilities. "The Institute, therefore, is in the unenviable position of having to turn down or defer many needed investigations that could now be undertaken," Dr. Pillars stated.

He stated also that the $100,000 proposed in H.R. 5046 was inadequate to meet the needs of the Institute's fellowship training program. In addition, Dr. Pillars urged appropriation of funds for construction of a new Institute building.

In supporting Dr. Pillar's request for additional funds, Dr. Dean cited the growth of research in dentistry. He presented a tabulation of the 834 papers presented before the International Association for Dental Research. The number of papers has almost trebled in the past six years, he stated.

"Dental research is now in a position to expand and to accept this challenge when funds are made available," he said. "A few million dollars spent in research may very appreciably reduce the American dental bill of nearly a billion and a half dollars per year."

ANNOUNCE RESIGNATION OF WALTER A. SUBERG

Mr. Walter A. Suberg, Association associate business manager, resigned from the Central Office staff May 1. Mr. Suberg plans to go into private business. His duties have been assumed by Mr. Wayne Burmeister, who has been serving as assistant business manager.

DENTAL EDITORS REGISTER FOR JOURNALISM CONFERENCE

More than 36 dental editors have registered for the June 12-14 Conference on Dental Journalism to be held at the University of Illinois, Allerton Park, Ill. Among the conference topics will be nomenclature for dental journalism, principles of layout and designs and the mechanics of handling editorial material on its way from author to editor to printer.

W. W. MacQueen, president of the American Association of Dental Editors, and William L. Barnum, chairman of the Council on Journalism, will preside.

B. J. BEAZLEY, PAUL GLUCKSMAN JOIN CENTRAL OFFICE STAFF

Appointment of Bernard J. Beazley and Paul H. Glucksman to the Central Office staff was announced in May by Harold Hillenbrand, Association secretary. Mr. Beazley was named secretary of the Council on Dental Trade and Laboratory Relations and of the Council on Federal Dental Services, effective June 6. He succeeds Mr. Bernard J. Conway, secretary of the Council on Legislation, who, in addition to his duties on the legislation Council, had been supervising staff activities for the other two Councils.

Mr. Beazley, a graduate of Loyola University Law School (Chicago), comes to the Association from the Armour Research Foundation of the Illinois Institute of Technology. Formerly, he was in the trust department of the Exchange National Bank of Chicago. He has served on the faculty of the Loyola Business School and is an Air Force veteran of World War II.

Paul H. Glucksman, Ph.D., joined the editorial staff June 1. He will assist in the development of the new journal, DENTAL ABSTRACTS, and will specialize in the translation and abstracting of articles

The 96th annual session will be held October 17-20 in San Francisco. This street scene of a cable car climbing one of San Francisco's hills past oriental and occidental places of worship symbolizes the city's international atmosphere. In the background is the Golden Gate Bridge.

from the German, French and Italian dental literature. Dr. Glucksman, who holds degrees from both Vienna University and the University of Göttingen in Germany, has served as editor of dictionaries for the Follett Publishing Co., as director of foreign publications of the European-American Literary Agency and as director of the foreign language department of Ziff-Davis Publishing Co.

REPORT HIGH DEMAND FOR HOUSING AND EXHIBIT SPACE

The demand is high for housing at the Association's 96th annual session to be held in San Francisco October 17-20, it was reported recently. According to the Housing Bureau, two major hotels, the Fairmont and the Mark Hopkins, are already completely filled.

In addition, John J. Hollister, Association business manager, states that an unprecedentedly large amount of exhibit space has been sold. According to Mr. Hollister, available space will be sold out long before the meeting.

An application blank for housing for the annual session will be found on page A-20 of THE JOURNAL.

EIGHT SYMPOSIUMS PLANNED FOR ANNUAL SESSION PROGRAM

Eight symposiums and panel discussions have been planned for the Association's 96th annual session October 17-20 in San Francisco. The Council on Scientific Session met May 22 and 23 at the Central Office to outline the scientific program. A symposium on roentgenographic and pathologic interpretation of lesions of the oral cavity will be presented by the section on oral surgery and anesthesia, the Council reports. Participants are Samuel A. Brandon, chairman of the section on oral surgery and anesthesia; Hamilton B. G. Robinson of Columbus, Ohio; Richard W. Tiecke of Chicago and Francis V. Howell of Portland, Ore.

A second symposium, "Prevention of Dental Caries," will be presided over by Arne F. Romnes, chairman of the section on operative dentistry. Panelists are David F. Mitchell of Minneapolis, Philip Jay of Ann Arbor, H. Trendley Dean of Chicago and Leonard S. Fosdick, Ph.D., of Chicago.

"Further Considerations of New Methods for Cutting Tooth Structure" also will be moderated by Dr. Romnes. Participants are Robert J. Nelsen of Wash-

ington, D.C.; William Sweeney, Ph.D., of Washington, D.C., Louis S. Hansen and Arne G. Nielsen of Bethesda, Md.

In addition, symposiums will be presented on occlusal equilibration, response of the dental pulp to operative procedures, the importance of appliances in orthodontic therapy, developments in the field of silver amalgam, emotional development of the child and selection and use of restorative materials.

In a March 31 letter, Donald Washburn, director of the scientific exhibit, reminded potential exhibitors that in order for their films or exhibits to be listed in the meeting program which will appear in THE JOURNAL, applications for space must be received by June 15. The closing date for all applications is July 15. Applications may be obtained from Dr. Washburn at the Central Office, 222 E. Superior St., Chicago 11.

Other organizations: headquarters and dates of 1955 session

American Academy of Gold Foil Operators	October 14-15	St. Francis
American Academy of the History of Dentistry	October 14	Mark Hopkins
American Academy of Pedodontics	October 12-14	Clift
American Academy of Periodontology	October 13-15	Sheraton-Palace
American Association of Dental Editors	October 15	Fairmont
American Association of Dental Examiners	October 14-15	Mark Hopkins
American Association of Dental Schools	October 15	Fairmont
American Association of Public Health Dentists	October 16	Sir Francis Drake
American College of Dentists	October 16	Fairmont
American Dental Assistants Association	October 17-20	Sheraton-Palace
American Dental Hygienists' Association	October 15-20	Clift
American Dental Society of Anesthesiology	October 15-16	Sir Francis Drake
American Denture Society	October 14-15	St. Francis
American Society of Dentistry for Children	October 14-16	Sheraton-Palace
Dental Dealers of America	October 15	St. Francis
Dental Manufacturers of America	October 16	St. Francis
International College of Dentists	October 15-17	St. Francis
Loyola University (Chicago) Dental Alumni Association	October 18	Sir Francis Drake
Marquette University Dental Alumni Association	October 18	St. Francis
National Alumni Association of Baltimore College of Dental Surgery	October 18	St. Francis
National Association of Dental Laboratories	October 17	Sheraton-Palace
National Association of Seventh Day Adventist Dentists	October 13-16	Huntington
Northwestern University Dental School Alumni Association	October 19	St. Francis
University of Illinois Telephone Extension Program	October 18	St. Francis
Alpha Omega	October 16-20	St. Francis
American Dental Interfraternity Council	October 17	Sheraton-Palace
Delta Sigma Delta	October 14-17	Sheraton-Palace
Psi Omega	October 17	Sheraton-Palace
Xi Psi Phi	October 17	Sheraton-Palace
Upsilon Alpha	October 14-15	Women's Club

DIRECTORY LISTING, LIFE MEMBERSHIP DEADLINES SET

The cutoff date for receipt of applications for life membership is August 17, announces Louis M. Cruttenden, Association assistant secretary. Life membership applications in order to be acted on at the San Francisco annual session must be received by that date. In addition, Dr. Cruttenden states, dentists who wish to be listed in the 1956 *American Dental Directory* as Association members must have their dues in by July 1.

COUNCIL REAFFIRMS FLUORIDATION STAND

The Council on Dental Research at its April 21 and 22 meeting in the Central Office reaffirmed its position on the value of fluoridation. A statement adopted by the Council reads:

> Where facilities (a common water supply) are available, fluoridation for the partial control of dental caries has been demonstrated by rigid scientific procedures to be an economical, effective, and safe method of markedly reducing the amount of dental caries in a population.

UPWARD CLIMB CONTINUES IN NUMBER TAKING BOARD EXAMS

The number of dental graduates taking the National Board examinations continues its upward climb, reports Victor L. Steffel, chairman of the Council of the National Board of Dental Examiners. In the March 28 and 29 testing period, 2,005 persons took Part II, and 1,840 took Part I, the largest group ever to be tested in one testing period.

Grades from the examinations already have been mailed to the schools and the state examining boards, Dr. Steffel states. The next testing session will be December 5 and 6. Grades of the National Board of Dental Examiners are now accepted in 29 states.

ANNOUNCE AGENDA FOR COUNCIL'S JUNE MEETING

Plans for two national conferences on dental health will be considered by the Council on Dental Health at its June 3 and 4 meeting in Chicago, according to David W. Brock of St. Louis, Council chairman. These conferences are the Sixth National Dental Health Conference October 15 in San Francisco and the Joint Conference on Federal Dental Health Programs to be cosponsored by the Council on Dental Health and the Council on Federal Dental Services.

Other items on the agenda will include a study of dental health care programs for employed groups, for persons living in rural areas and for persons with chronic illnesses, particularly handicapped children.

RELIEF FUND AT $110,633; NEARLY $6,000 OVER 1954

Contributions to the Association Relief Fund reached $110,633 on May 15, an amount nearly $6,000 more than the contributions on the same date a year ago. One new society, Arizona, topped its quota during the month to bring to 43 the number of societies contributing over 100 per cent. The drive continues through June 30.

DATES ANNOUNCED FOR 1956 APTITUDE TESTS

Three testing periods for the 1956 Dental Aptitude Testing Program have been announced by the Division of Educational Measurements of the Council on Dental Education. They are: October 7 and 8, 1955; January 6 and 7, 1956, and April 27 and 28, 1956. The tests will be given at 46 dental schools and 45 other centers, according to Samuel T. Mayo, Division director.

This year more than 5,600 persons

were tested. Some 6,500 applied to dental schools. It is expected that next year will register another increase, with some 7,500 to 8,000 applying for admission to the schools.

During the current year, the overseas branch of the University of Maryland was added to the list of testing centers. Tests are given also in territories of the United States.

ASSOCIATION FELLOWS' LUNCHEON HELD IN CHICAGO

A luncheon for American Dental Association Fellows at the National Bureau of Standards and the National Institutes of Health was held March 21 in Chicago. The Fellows also toured the Central Office. Seated left to right in the accompanying photograph are (* denotes research fellow): Rachel J. Fanning*; H. Trendley Dean, secretary, Council on Dental Research; E. G. Hampp*; George C. Paffenbarger*; W. T. Sweeney, chief, dental research section, NBS; Claire L. Burns, dental research section, NBS, and Harold Hillenbrand, Association secretary.

Standing, left to right are: Maj. Jack L. Hartley, (DC) USAF, guest worker, NBS; Sholom Pearlman, assistant secretary, Council on Dental Therapeutics; John W. Stanford*; Lon W. Morrey, Association editor; Louis M. Cruttenden, Association assistant secretary; Aaron S. Posner*; Peter Goulding, Association Bureau of Public Information; William C. Hansen, dental research section at NBS; George Dickson, dental research section, NBS; Harold J. Caul*; Alphonse F. Forziati*; John W. Kumpula, dental research section at NBS; Denton L. Smith*; John Folk*; Gerhard M. Brauer, dental research section at NBS; Cmdr. Nelson W. Rupp, (DC) USN, guest worker at NBS; Paul J. Schouboe, dental research section at NBS; Stuart A. Narrod*; Tetsuo Shiota*; R. H. Friedrich, secretary, Association Council on Dental Health; Melvin E. Lawson, Jr.*, and Duane F. Taylor, dental research section at NBS.

CIVIL DEFENSE GROUP URGES ATTENDANCE AT OLNEY CLASS

Constituent societies were urged last month to send representatives to the Federal Civil Defense Administration staff college in Olney, Md., for its course in civil defense November 16-18. The pro-

American Dental Association Fellows at the National Bureau of Standards and the National Institutes of Health attended a luncheon held March 21 in Chicago. A tour of the Central Office was included in their Chicago visit.

gram, designed specifically for dentists, was discussed at a May 14 and 15 meeting of the Association's Subcommittee on Civil Defense held at the Central Office. Carl Sebelius, of Nashville, Tenn., presided at the meeting.

During the weekend, the subcommittee reviewed a number of films devoted to emergency casualty care and recommended that the films be made available to state and local dental societies for the training of members.

In addition to subcommittee members, participants included Russell W. Bunting, national dental consultant to the FCDA; Glenn Cartwright, regional FCDA consultant, and Mr. Frank W. Barton, secretary of the Council on National Defense of the American Medical Association.

Mr. Barton urged Association members, especially those on the east coast, to attend a June 4 civil defense conference of the A.M.A. in Atlantic City. Dentists interested may write Mr. Barton at the A.M.A. headquarters, 535 N. Dearborn St., Chicago.

BOARD APPOINTS 1956 SECTION OFFICERS

The Board of Trustees at its March 31 to April 1 meeting held in the Central Office appointed the following men section officers for 1956:

Operative Dentistry • Charles M. Murto of the District of Columbia, chairman; Herbert D. Coy of Virginia, vice-chairman.

Oral Surgery and Anesthesia • J. Lorenz Jones of California, chairman; Don H. Bellinger of Michigan, vice-chairman.

Orthodontics and Oral Development • George A. Dinham of Minnesota, chairman; Clifford L. Whitman of New Jersey, vice-chairman.

Pedodontics • Ruth E. Martin of Missouri, chairman; William W. DeMeritt of North Carolina, vice-chairman.

Periodontics • Samuel C. Miller of New York, chairman; Arvin W. Mann of Florida, vice-chairman.

Practice Management • Wallace N. Kirby of Illinois, chairman; Harry M. Klenda of Kansas, vice-chairman.

Complete Prosthodontics • Arthur L. Roberts of Illinois, chairman; Vincent Trapozzano of Florida, vice-chairman.

Partial Prosthodontics • Richard L. Simpson of Virginia, chairman; Douglas H. Yock of Minnesota, vice-chairman.

Public Health Dentistry • Polly Ayers of Alabama, chairman; Rulon W. Openshaw of California, vice-chairman.

Research • Reidar F. Sognnaes of Massachusetts, chairman; Albert H. Kniesner of Ohio, vice-chairman.

Roentgenology • Sam W. Williams of Minnesota, chairman; Donald T. Waggener of Nebraska, vice-chairman.

Projected Clinics • Frank D. Paul of New Jersey, chairman.

PROPOSE APTITUDE TESTING PROGRAM FOR HYGIENISTS

Preliminary plans for establishing a nation-wide aptitude testing program for prospective dental hygienists were approved by dental deans, directors of dental hygiene programs and representatives of the American Dental Hygienists' Association who attended the third Workshop on Dental Hygiene March 23 and 24 in Chicago. Participating in the two day conference, which was sponsored by the Council on Dental Education, were representatives of 42 institutions, including all but two of the nation's 31 dental hygiene schools.

Conference participants recommended also study of an achievement testing program of all first and second year hygiene students. The dental hygiene schools are now cooperating in a project to bring together and to distribute copies of achievement tests that are given by the dental hygiene schools. The achievement testing programs probably would be administered by the hygienists' association with American Dental Association representatives acting as consultants, stated Shailer Peterson, Council secretary.

CONTRIBUTIONS TO KOREAN DENTAL FUND PASS $10,000 MARK

American dentists had contributed $10,448 to the special dental fund of the American-Korean Foundation as of May 12, according to Oren Oliver, chairman of the American Dental Association Council on International Relations. The money came from 3,856 members. Dr. Oliver and President Daniel F. Lynch are cochairmen of a special campaign to raise funds for the rehabilitation of dentistry in war-damaged Korea.

Meanwhile, Korean dentistry took another step forward. On April 1, a second dental school opened with 44 students enrolled in the predental program at Taegu Medical College and Hospital.

Dental Societies

LABORATORIES ENJOINED FROM DEALING WITH PUBLIC

An injunction prohibiting 20 Chicago dental laboratories from dealing directly with the public was signed April 22 by Judge Frank M. Padden of the Superior Court. The decree resulted from a suit filed in 1950 by the Chicago Dental Society.

Although the practices of these laboratories varied, the Court found that all advertised in one way or another directly to the public, thereby offering to perform dental services in violation of the Illinois Dental Practice Act.

The laboratories may no longer take impressions, construct, reline or repair dentures and bridges directly for the user without the services of a licensed dentist. Methods of advertising enjoined include display advertising in the Chicago classified telephone directory, in newspapers, by the use of neon signs, window posters and displays.

More than 3,500 pages of testimony were taken from over 100 witnesses during the lawsuit. The laboratories are expected to appeal the decree.

"Open Wider, Please," the history of dentistry in Oklahoma published by the Oklahoma State Dental Association, was on display at the recent convention of the state society held in Tulsa, Okla., April 17-20. Shown (l. to r.) are: V. C. Tisdal, president-elect of the state society; W. R. Alstadt, Twelfth District Trustee; D. L. Rippeto, incoming president; Harry Sorrells, chairman, history committee, and A. E. Bonnell, Jr., retiring president. About two thirds of the society's membership attended the convention.

FORM TRI-STATE DENTAL HEALTH CARE COMMITTEE

A joint committee on dental health care, composed of representatives of the New Jersey, New York and Pennsylvania state dental associations, was organized at a meeting of six eastern dental societies held in Atlantic City, N.Y., April 18-20. The committee was formed to meet the problem of providing professional guidance for dental health care programs which encompass more than one state. It is the first committee of its kind.

The principal functions of the committee will be to see that dental health care programs set up within the bound-

In recognition of the need of private dental schools for funds, checks for $100 were presented to two dental schools April 21 by the Madison (Ill.) District Dental Society. Shown (l. to r.) are: Leroy Boling, dean of the Washington University dental school; James Mahoney, past president of the Illinois State Dental Society; Charles J. Hemphill, president of the district society; George Travers, representing St. Louis University dental school, and Paul Maley, past president of the district society.

aries of the three states involved guarantee the highest standards of dental health care to the beneficiaries and that the dental profession is kept informed on the development of such programs. Dental societies in bordering states will be invited to participate. The joint committee held its second meeting May 22 in Philadelphia.

MARK GOLDEN ANNIVERSARY OF ILLINOIS DENTAL JOURNAL

Fifty years of dental journalism were marked in May as the *Illinois Dental Journal's* white and gold anniversary issue rolled off the press. The journal features a review of dental events in Illinois during the last 90 years from the 1865 meeting when "about 50 dentists assembled at the Dental Depot of S. S. White, Esq., in the city of Chicago, on the evening of July 24, 1865, for the purpose of organizing a state dental society" to the present day. William P. Schoen, Jr., currently is editor.

HIGH SCHOOL DENTAL HEALTH CONCERN OF NEW YORK GROUP

The need of high school students for guidance in dental health matters has prompted the Oral Hygiene Committee of Greater New York to sponsor a health education program in a Brooklyn school. On May 5 and 6, the committee, which is a joint organization of the New York district dental societies, presented films and table clinics at the Midwood High School on various aspects of dentistry.

Included in the 12 clinics were such subjects as nutrition, toothbrushing, dentistry as a career, anesthesia and fluorides. Principals of all academic and vocational high schools of Brooklyn were invited to send a faculty observer. It is hoped that this program will stimulate interest for future projects in other schools, according to Alan A. Axelband, chairman of the Oral Hygiene Committee.

SUBSCRIPTS • Dental Care Cooperative, a dental insurance organization formed recently in Seattle, Wash., has retracted its statement that its prepayment plan for dental health care has been endorsed by the American Dental Association. The retraction followed a protest from Harold Hillenbrand, Association secretary. The Washington State Dental Association is investigating the organization. Meanwhile, Washington's state insurance commissioner, William A. Sullivan, denied the group registration on the grounds that it had conducted a sales campaign and taken memberships before registering with the state. . . . The North Dakota State Dental Association is cooperating in the June 6-10 North Dakota School Health Workshop in Grand Forks. One full afternoon of the workshop is

devoted to dental health. Over 100 people are expected at the conference. . . . The Second District Dental Society of the State of New York held a mortgage-burning ceremony at its headquarters in Brooklyn May 19. The $100,000 building is now completely paid for.

Dental Education

EARL O. BUTCHER APPOINTED ASSISTANT DEAN AT NYU

Earl O. Butcher, Ph.D., chairman of the department of anatomy at the New York University College of Dentistry, has been appointed assistant dean of the College, Dean Raymond J. Nagle announced May 8. Dr. Butcher, a teacher of medical sciences for almost 30 years, joined the College of Dentistry faculty in 1943 and has been chairman of the anatomy department since 1946. He is a graduate of DePauw University, earned his M.A. and Ph.D. at Cornell, and did studies in tissue culture at the Carnegie Institute of Embryology.

Dr. Butcher has written more than 80 articles on anatomy and physiology for professional journals. He is currently engaged in research on the skin and teeth. Dr. Butcher has been elected to five national honor societies and holds membership in seven professional organizations.

FORSYTH INFIRMARY, HARVARD DENTAL SCHOOL AFFILIATE

Affiliation of the Forsyth Dental Infirmary for Children and the Harvard School of Dental Medicine was announced May 15 by Howard M. Marjerison, director of Forsyth, and Roy O. Greep, Ph.D., dean of Harvard School of Dental Medicine. According to the joint announcement, the affiliation makes possible a new collaboration in the care of patients, the teaching of dentistry to graduate and undergraduate students and research.

Students at the Harvard school will continue to receive the major portion of their clinical training in the school's own dental clinic and at the Massachusetts General Hospital and Children's Medical Center, Dean Greep said. Clinical work at Forsyth will be under the supervision of the Infirmary staff.

Affiliation of the School of Dental Medicine and the Forsyth Dental Infirmary will not affect the Forsyth School for Dental Hygienists, which is already associated with Tufts University.

LAUNCH SECOND NEW JERSEY DENTAL SCHOOL

Plans for the opening of a new school of dentistry in the fall of 1956 at the Teaneck, N.J., campus of the Fairleigh Dickinson College have been announced by Mr. Edward T. Williams, chairman of the board of trustees. The dental school will be New Jersey's second. The first, Seton Hall University's College of Medicine and Dentistry in Jersey City, was formally established last August.

According to Mr. Williams, the first class at the Fairleigh Dickinson dental school will consist of 35 students. A science building, now under construction on the campus, will include space for a dental clinic, biochemistry and physics laboratories, diagnostic, x-ray, surgery, anesthesia, oral hygiene and prosthetics departments. After the opening of the dental school, the School of Dental Hygiene, now located at the college's Rutherford campus, will be moved to Teaneck.

A third new school, also expected to begin operation in the fall of 1956, will open at the University of West Virginia in Morgantown. In addition, consideration is being given to the establishment of a dental school in Puerto Rico, classes to begin in 1957.

Nearly 400 persons attended the recent Fifth Annual All-Day Clinic of the Emory University chapter of the Student American Dental Association in Atlanta, Ga. A featured speaker was Gerald D. Timmons, dean of the School of Dentistry of Temple University in Philadelphia (inset). Also among the guests were officers of the dental school, the university, the hospital and students from Alabama University.

ROTATING INTERNSHIP OFFERED BY COLLEGE

A rotating internship in dentistry is offered by the College of Physicians and Surgeons in San Francisco. The course provides work in the hospital in conjunction with the graduate oral surgery program and courses in precision casting, complete denture prosthetics, gold foil, endodontics, dentistry for children, tooth guidance, oral roentgenology and local anesthesia.

CLOSED CIRCUIT TV GIVEN WEST COAST DENTAL SCHOOL

Closed circuit television equipment has been presented to the School of Dentistry of the College of Physicians and Surgeons in San Francisco. The equipment, a gift of the school's alumni association, includes a camera, control unit and three television sets, two for students and one for the instructor.

John Tocchini, dean of the dental school, pointed out that with the new equipment the members of entire classes would be able to watch detailed surgery at the same time. Taking part in the presentation ceremonies were Dean Tocchini; Marvin Andrews, alumni association president, and Frederick T. West, chairman of the alumni committee that secured the equipment.

SCHOOLS ANNOUNCE SUMMER SCHEDULES

California • July 17-22 are the dates of a course in dentistry for children offered by the University of California Extension. Charles Sweet and associates will teach at the dental clinic, Harbor General Hospital, Torrance, Calif. Additional information may be obtained from J. Eugene Ziegler at the University, 815 S. Hill St., Los Angeles 14.

Illinois • The University of Illinois College of Dentistry announces a symposium on oral cancer June 10. The symposium is sponsored by the American Cancer Society, Illinois division, in cooperation with the college and with the Chicago College of Dental Surgery, Loyola University, (Chicago), Northwestern University Dental School and the Chicago and Illinois dental societies. Participating on the program are John A. Rogers, M.D., American Cancer Society; Patrick D. Toto, and Joseph

G. Kostrubala of Loyola University; Walter W. Dalitsch, Northwestern University; Bernard G. Sarnat, W. Howard Kubacki and Stanley D. Tylman of the University of Illinois.

Application for attendance may be made to the American Cancer Society, 139 N. Clark St., Chicago 2. There is no registration fee.

OTTO BRANDHORST HONORED BY VIRGINIA SCHOOL

Otto W. Brandhorst, president of the American Dental Association during 1951-1952 and one of the nation's outstanding dental leaders, was awarded the honorary degree of Doctor of Science at the annual commencement exercises of the Medical College of Virginia in Richmond May 31. Dr. Brandhorst served last month as an adviser to the official United States delegation to the Eighth World Health Assembly in Mexico City.

Recently he served as a member of the Task Force on Medical Services of the Commission on Organization of the Executive Branch of the government, commonly known as the Hoover Commission. Dr. Brandhorst currently is chairman of the Association's Special Committee on the Survey of Dentistry.

LOYOLA STUDENTS PRESENT CLINICS AT STATE MEETING

Three students from the Chicago College of Dental Surgery at Loyola University presented clinics at the annual meeting of the Illinois State Dental Society May 9-12 in Peoria. They were Robert Getty, Edward Warner and Glenn Weinberg.

The trip to Peoria and the opportunity to present their clinics were prizes won by them at a student American Dental Association program held April 27, at which time a jury composed of officials from the school, the Illinois and Chicago Dental Societies and the American Dental Association awarded them first and second prizes. "Why Amalgams Fail" was the title of the first place winner, presented by Robert Getty. "Chemotherapy—Its Place in Dentistry" was the title of the clinic presented jointly by Edward Warner and Glenn Weinberg. In addition to the Peoria trip, cash prizes of $50 and $25 were awarded.

SUBSCRIPTS • Ceremonies dedicating the new dental building of Howard University in Washington, D.C., were held May 18. . . . Ralph Lopez of Sante Fe has been named by Gov. John Simms to the board of regents of the University of New Mexico. . . . Membership in the Student American Dental Association of Northwestern University Dental School totals 314, or 82 per cent of the student body. Three programs were presented by the Association during the current scholastic year. . . . Brig. Gen. Louis H. Renfrow was honored as an outstanding alumnus by Washington University in St. Louis February 19.

Public Health

NEWBURGH-KINGSTON STUDY SHOWS FLUORIDATION SAFE

The tenth anniversary of the Newburgh-Kingston (N.Y.) fluoridation study was marked April 21 by issuance of a report which emphatically underlined the measure's safety and effectiveness. David B. Ast, state dental director and chief of the study, revealed that the over-all reduction in the dental decay rate of Newburgh children, who drank fluoridated water, was 60 per cent, as compared to Kingston children, who drank fluoride-deficient water.

Reduction in the DMF rates ranged from 51 per cent in ten year olds, who started drinking fluoridated water after they were one or two years old, to 75 per cent in the six year olds, who had

been drinking fluoridated water all their lives. The DMF rate for first permanent molars among the six and seven year olds of Newburgh was 73 per cent and 65 per cent lower than those of Kingston children of the same age. Results were based on dental examinations made at the end of the 1953-54 school year.

An additional important fact was reported by Dr. Ast. "At each age," he announced, "the proportion of cavities originating on side surfaces of the teeth is markedly higher in the control city of Kingston than in Newburgh. This seems to indicate that fluoridation is especially effective in preventing those lesions which are most difficult to detect and correct. Therefore, while the overall benefit from water fluoridation is approximately 60 per cent, the reduction in time and cost of care may be of even greater magnitude."

In addition to the dental examination, extensive physical examinations have been made each year during the study, reported Edward R. Schlesinger, M.D., associate director of the division of medical services of the state health department. These examinations, said Dr. Schlesinger, "confirm earlier findings that water fluoridation has no demonstrable systemic or developmental effects on children except for the known dental benefits."

Roentgenographic studies of the hands, forearms and knees have been made as well as blood and urine analyses. A study of mortality data reveals, Dr. Schlesinger reported, that "over a 15 year period, the infant mortality data in both cities shows a continuing comparable downward trend. The same downward trend in the stillbirth rate is evident in both cities."

Meanwhile, in spite of the scientific evidence to the contrary, antifluoridationists continued to deny the value of the health measure. Benjamin Nesin, director of laboratories for the New York City Department of Water Supply, Gas and Electricity, told a meeting of the New York section of the American Water Works Association, that too little was known of the full effect of fluoride-treated water.

The New York City Board of Health has twice endorsed the measure. There are now 1,070 communities, with a total population of 20,591,747 which have fluoridation projects.

SUBSCRIPTS • J. R. Robinson of Honolulu has been named director of the newly organized division of dental health of the Department of Health in Hawaii. Prior to his appointment, he served six and a half years in the divisions of dental health of the Louisville and Jefferson County (Ky.) Board of Health. . . . For reasons of ill health, James H. Pence has resigned as North Dakota's dental director. . . . Pullman, Wash., voted 1,142 to 515 in favor of fluoridation in a recent referendum. . . . David Striffler, director of New Mexico's division of dental health, is on the planning committee of the School Health Workshop scheduled June 27-July 1 in Las Vegas.

National Defense

DENTISTS URGED TO SERVE AS RADIATION MONITORS

Deadly radioactive ash may spread over a 7,000 mile area after a nuclear weapon attack, and it may kill those who are exposed to it. For this reason, civil defense services must be increased, and dentists are being asked to serve as radiation monitors, according to Russell W. Bunting, dental consultant to the Federal Civil Defense Administration.

In the April issue of the FCDA *Dental News Letter,* Dr. Bunting stated that

Maj. Gen. Oscar P. Snyder (center), chief of the Army Dental Corps, left April 15 for a series of professional conferences in eight European cities where U.S. Army hospitals and dental clinics are located. Accompanying him was Joseph L. Bernier (left), chief of the dental and oral pathology branch, Armed Forces Institute of Pathology, and Miles R. Markley, consultant in operative dentistry to the Army surgeon general.

because of familiarity with radiation hazards, dentists can quickly learn the technics of radiation detection. Dental societies and individual dentists should request state and local civil defense offices to provide monitoring instruments and training in their use, Dr. Bunting said. He stated that those interested should write for Advisory Bulletin 179 and F.Y.I. 167 on radiologic defense. They may be obtained from the FCDA, Battle Creek, Mich.

DEFERMENT POSSIBLE FOR RESEARCH, TEACHING TRAINEES

A notice dated May 3 from the Office of Defense Mobilization in Washington, D.C., and addressed to deans of the medical and dental schools and to the education councils of the Association and the A.M.A., states that deferment from military service may be possible for certain groups of dental students. The memorandum states that local Selective Service Boards are authorized to defer dental students with a potential interest in a teaching or research career in a basic science department in order for these students to obtain training or service in these fields.

The operation of the Selective Service law, states the memorandum, by making deferment for these students virtually impossible has resulted in "an almost complete absence of recruits for these important fields of medical and dental education and research."

To obtain deferment, the student concerned should apply to his local Selective Service Board and should be supported in his request by the dean of his dental school.

The Association's Council on Dental Education has consistently stated that such students should be given deferment if research and teaching were not to suffer.

SUBSCRIPTS • Rear Admiral Herman Paul Riebe, (DC) USN, became Inspector General, Dental, Navy Department, April 27. Admiral Riebe succeeds Rear Admiral Ralph W. Malone, currently chief of the dental division, Bureau of Medicine and Surgery. . . . A new insignia has been developed for use by Air Force Medical Service dentists. The insignia is a small silver badge with a caduceus mounted on it and a "D" superimposed on the caduceus.

International

AMERICAN DENTAL SOCIETY OF EUROPE MEETS NEXT MONTH

Essays, clinics and films as well as a business meeting and social program are planned for the July 11-14 meeting of the American Dental Society of Europe in Amsterdam, Holland. This is the 60th

Myung Jin Park, dean of the Korean dental school, is on tour of the United States under the auspices of the American-Korean Foundation. Discussing the work of the American Dental Association are (l. to r.) J. Roy Doty, secretary of the Council on Dental Therapeutics; Harold Hillenbrand, Association secretary; Dean Park, and Paul Chung, assistant professor of prosthetics, Northwestern dental school.

Senior students of Korea's dental school in Seoul operate the school's 20 chair clinic. Left: student Kim Chung Lim is watched by Col. John S. Oertel, Korean civil assistance command dental consultant, and You Sin Park, acting dean of the dental school.

meeting of the society, which was formed in the summer of 1873 by five American dentists vacationing together on Rigi Mountain in Switzerland.

The Society was formed "to afford American dentists practicing in Europe the benefits of an organization for the promotion of a more extensive professional intercourse." It is the custom of the group to meet each year in a different country.

DOMINICAN DENTISTS ELECT OFFICERS

Officers recently elected by the Sociedad Odontologica Dominicana were Rafael Rodríguez Largier, president; Fernando Morban L., vice-president; Albertina de Marión, treasurer; José A. Irizarry P., recording secretary; Marcos A. de Herrera B., corresponding secretary; Hugo Molina Dajer, Paolo Prager W. and Matilde H. de Franco, members of the board of directors.

HANS GREVE, GERMAN DENTAL HISTORIAN, DIES

Hans Christian Greve, distinguished German historian of dentistry, died April 13, 1955, at the age of 85. He was professor of dentistry at the University of Erlangen, Bavaria, and had contributed numerous articles to the German dental journals. He was editor of *Deutsche Zahnärztliche Wochenschrift* from 1906 to 1911. In 1952 he published a book entitled *Vom Zahnheilhandwerk zur Zahnheilkunde* (From Dental Technic to Dental Science), a general history of dentistry to the present century.

DEATH OF HANS TURKHEIM, GERMAN PROFESSOR REPORTED

Hans J. Turkheim, honorary professor at the University of Hamburg, passed away in London April 27 at the age of 65. Dr. Turkheim was a frequent contributor to the dental literature. Recent articles by him appeared in the *International Dental Journal*, the *British Dental Journal* and the *Journal of Dental Research*. The July 1954 issue of THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION carried an article entitled "Interpretation of Roentgenographic Details Indicating Conservative Treatment."

NEW OFFICERS ANNOUNCED FOR INDIAN DENTAL SOCIETY

Officers of the All India Dental Association for 1955 were elected February 17 at the Association's meeting in Calcutta. Elected were: R. Prakash, president; V. M. Desai, president-elect; F. N. Mehta, Vero P. De'Sa and B. N. Bhattacharya, vice-presidents, and Fali S. Mehta, honorary general secretary.

Also chosen were: Capt. R. M. Narelvala, honorary secretary; R. B. Raut, honorary assistant secretary; Capt. N. R. Vazifdar, honorary treasurer, N. N. Bery, public relations officer; S. P. Kapadia, Journal editor; Rai Chopra, chairman of the council on dental health, and K. Singh, honorary secretary of the council on dental health.

SUBSCRIPTS • Otto W. Brandhorst, a former president of the American Dental Association, was an official adviser to the U.S. delegation to the Eighth World Health Assembly in Mexico City May 10-28. . . . The 14th French Congress of Stomatology will be held in Paris October 3-9. Persons interested in attending may contact Robert Vrasse, general secretary, Laennec Hospital, 2 rue de Miromesnil, Paris 8. . . . Information on the Third International Dental Congress scheduled for October 23-28 may be obtained from German Sanchez Cordero, Uruapan 3, Mexico.

Research

YOUNG SCIENTIST WINS AWARD FOR DENTISTRY PROJECT

Jo Ann Huminik, Anacostia (Washington, D.C.) High School, class of 1954, won a Certificate of Merit recently for a research project on amalgam restorations. The award was made to the young scientist by the Washington Academy of Science.

Jo Ann Huminik

Miss Huminik received also an honorable mention in the Westinghouse Science Talent Search and was presented the Bausch and Lomb Award for scholarship in science on graduation from high school. At present, she is majoring in chemistry at American University in Washington, D.C., where she holds a Mary Graydon Scholarship.

GORDON RESEARCH CONFERENCE CALLED FOR AUGUST

The Gordon Research Conference on the Chemistry, Physiology and Structure of Bones and Teeth will be held August 1-5 at Kimball Union Academy, Meriden, N.H. The five day conference, designed to provide information on latest developments in the field and to suggest methods of approach for further research, will discuss the following subjects: collagen, nature and elaboration of ground substance, skeletal dynamics, the parathyroids and recent studies on agents affecting bone.

Meetings are held in the morning and evenings. Afternoons are available for recreation or participation in discussion groups. Attendance is limited to 100. Requests for attendance at the conference should be addressed to W. George Parks, director, department of chemistry, University of Rhode Island, Kingston, R.I. From June 10 to September 2 mail should be addressed to Dr. Parks at Colby Junior College, New London, N.H.

SUBSCRIPTS • Visitors during the last few months to the dental research section at the National Bureau of Standards in Washington, D. C., have included B. B. Eraña, president of the Philippine Dental Association; Prof. A. D. Hitchin, dean of the University of St. Andrews School of Dentistry, Scotland; Ram Sarup Nanola, student from India, and Martin A. Rushton, professor of dentistry, University of London.

General

VITAMIN PRODUCT SUPPORT DENIED BY RESEARCH COUNCIL

The National Research Council, organization of the National Academy of Sciences, has issued a statement that the use of its name in connection with certain vitamin products advertised to dentists is a misrepresentation of fact. According to the statement, some vitamin manufacturers have advertised their products as "National Research Council recommended formulas or standards." The formulas were published in a 1952 NAS-NRC reported entitled *Therapeutic Nutrition, Publication 234,* prepared for the Food and Nutrition Board.

As the formulas were never considered by the Food and Nutrition Board to be final recommendations for general use, "use of the name of the National Research Council in connection with any products using the formulas as adjuvants to drug preparations is inexcusable," the statement declared.

In addition, the Council pointed out, the formulas were "considered tentative pending further research results" and the "need for critical reconsideration of the subject" is indicated. As a result, publication 234 has been withdrawn by the Council. H. Trendley Dean, secretary of the Association's Council on Dental Research, represents the Association on the National Research Council.

COMMISSION CONDEMNS GOVERNMENT IN BUSINESS

The "unfair competition" of thousands of federally-owned business facilities with private concerns was strongly condemned in a report issued by the Hoover Commission May 16. The special report stated that government enterprises were manufacturing dental and pharmaceutical items as well as many other products. Military agencies alone, the report stated, have more than 2,500 business facilities in operation. Some 1,000 of these, it said, could be "eliminated without injury to our national defense or any essential government function."

DENTISTS TO USE EXTRA CARE DURING POLIO SEASON

Postponement of some dental procedures during periods in which the local incidence of poliomyelitis is relatively high has been suggested by the National Foundation for Infantile Paralysis, Inc. "Elective procedures, especially those about the mouth, such as dental extractions, should be postponed until after the epidemic season," the Foundation stated.

In addition, where possible, certain injections should be avoided. There is evidence that such procedures during the epidemic season increase the risk of the patient's developing poliomyelitis, the Foundation stated. Injections to be avoided by dentists, according to the New York Institute of Clinical Oral Pathology, Inc., are those for local or block anesthesia.

G. V. BLACK DENTAL OFFICE AT SMITHSONIAN INSTITUTION

G. V. Black's 1875 dental office, including chair, cuspidor, dental drill and other instruments, is now on exhibit at the Smithsonian Institution in Washington, D. C. Dr. Black, known as the father of modern dentistry, invented one of the first cord-driven, foot-powered dental engines. He contributed many texts and over 500 papers to dentistry. Dr. Black's equipment was given to the Institution by the Northwestern Dental School.

Also • Operations of the Murry and Leonie Guggenheim Dental Clinic have continued to expand. The clinic, which provides dental care for children of indigent families in New York City, had nearly 6,000 more patient visits in 1954 than in 1953. . . . The Orban-Wentz *Atlas of Clinical Pathology of the Oral Mucous Membrane* was incorrectly listed in the April JOURNAL. Correct price is $12.50. . . . June 17 and 18 are the dates of Reunion Day of the Dental Alumni Society of the University of Pennsylvania in Philadelphia. . . . Official sanction was given April 22 for Britain's family doctors to use hypnosis as a pain killer and for treatment of deep seated psychological disturbances. The report recommending use of hypnosis was published by the British Medical Association in its journal.

Book Reviews

ORAL CANCER

By J. Roy Bourgoyne. 295 pages with 18 illustrations. Index. Price $6. Philadelphia, Lea & Febiger, 1954.

Although this book is not a bookshelf requisite for the oral surgeon, it may have merit in acquainting the completely uninformed with some aspects of cancer, particularly that of the oral cavity. The text abounds with extraneous and superfluous material, remote from the subject at hand, and omits completely many vital phases. A few chapters adhere to the descriptive titles. Most of them deal in broad generalities with multiple repetitions; their contents are often unrelated to chapter titles.

The chapter "Diagnosis and Treatment Planning" futilely attempts to encompass the scope of oral examination. Chapters entitled "Types of Oral Cancer" and "Methods of Cancer Diagnosis" provide scattered bits of information heretofore adequately provided in other scientific literary sources. The chapter on biopsy repeats a good portion of the preceding chapter on cancer diagnosis.

Successive discussions of metastasis, leukoplakia, lichen planus and salivary gland tumors continue on in generalities, giving the reader little useful knowledge. The chapter "Diet for Cancer Patients" describes dietary measures for the patient with cancer of the esophagus and stomach, and "Treatment of Cancer" deals generously with therapy for cancer of the uterus, stomach, breast, cervix and prostate.

Chapters on "Radiation Therapy in the Treatment of Cancer" by David S. Carroll and "Maxillofacial Prosthetics in Patients with Cancer" by Ralph S. Lloyd greatly aid in elevating this book toward the rank of a worthy scientific literary contribution.

Dr. Carroll discusses in a concise manner the principles of the various forms of electromagnetic radiation as a tissue destroying factor. Dr. Lloyd does an excellent job of presenting to the reader various prostheses and technics of construction for correction of defects created by cancer treatment and describes also protective appliances for radiation restriction.

Dr. Bourgoyne closes the book with "Responsibility of the Dentist," reviewing again material which is common knowledge to any dental practitioner. "Review of the Study of Cancer," which is a question and answer review of the text, probably could supplant most of the book. The book shows minimal original thinking and in no manner represents valuable scientific knowledge as an outgrowth of the author's personal experiences. It undoubtedly was compiled from previous existing publications, and there appears little justification for its existence.

Herbert J. Bloom

THE PERMANENT REVOLUTION IN SCIENCE

By Richard L. Schanck. 112 pages. Index. Price $3. New York, Philosophical Library, 1954.

C. West Churchman, editor of *The Journal of the Philosophy of Science*, in a foreword to this book explains its purpose and content: "This is one of a series of books by a group of scientists dedicated to the founding of an Institute of Experimental Method, whose major goal would be the development of methodology as a science in itself. This particular text indicates how scientists somewhat unconsciously have been groping to a self-conscious methodology in their work, and emphasizes content. Other textbooks have been written and are being written by others of this group in the fields of methodology and ethics."

It is fortunate that this foreword has been written, for there is little lucid writing to be found in the book itself.

This book is dull reading chiefly because of the nature of the subject, but there are other important contributing reasons. Among these may be mentioned: (1) there appears to be little real need for a work of this kind, (2) the author apparently does not realize that the chief purpose of writing is to make meaning clear and (3) the writing is often bad grammatically.

This work would have been difficult enough for any one to write effectively; it would be doubly difficult for any one who is not a careful craftsman in the art of writing. The writing is prolix and is often marred by pseudo-scientific jargon and phraseology.

The purpose of any writing, scientific or otherwise, is to clarify ideas rather than to confuse them. It follows logically that the more abstract the ideas are, the more need there is for precision in the choice of words.

Perhaps this book may find a welcome place among small groups of initiates who boast of an especial enlightenment in its subject matter, but most certainly it will not be enjoyed by laymen, not even by the most informed laymen.

Anderson M. Scruggs

CLINICAL ROENTGENOLOGY: THE HEAD, NECK AND SPINAL COLUMN

By Alfred A. De Lorimier, M.D., Henry G. Moehring, M.D., and John R. Hannan, M.D. 464 pages with 734 illustrations. Index. Price $18.50. Springfield, Ill., Charles C Thomas, 1954.

This is a comprehensive volume. Illustrations and discussion of abnormal and diseased conditions of the head, including the facial bones, occupy more than half the volume. Many interesting and unusual illustrations are interpreted. The abnormal conditions shown are preceded by several illustrations of normal skulls on which the anatomy is finely delineated.

It is most unusual in a volume on roentgenology to find so little mention of the technic used in making the roentgenographic projections presented by the author. Diagrammatic illustrations are lacking also.

The chapter on the paranasal sinuses is valuable to all persons interested in these and the surrounding structures. Therefore, the chapter is important to every dental practitioner and has especial value for those engaged in oral surgery. The intimate relation between the maxillary molars and the antra is familiar to all. At times it is not easy to determine the source of pain when structures supplied by the second division of the trifacial nerve are involved. There seems to be no direct reference in the book to this complication.

The volume is undoubtedly of great value to the otorhinolaryngologist, the general physician and specialists in surgery. I would not consider the book of particular interest and value to the dentist since less than 60 pages are devoted to purely dental conditions. These pages discuss the difficulty of securing excellent roentgenograms of the teeth and refer the reader to standard texts on dental roentgenographic technic.

It is evident that the authors did not intend to supplant any regular text on the subject of oral roentgenology but rather intended that this volume should serve as supplemental or collateral reading for the dentist.

L. R. Main

PUBLIC RELATIONS IN MEDICAL PRACTICE

By James E. Bryan. 301 pages. Index. Price $5. Baltimore, Williams & Wilkins Co., 1954.

This well-written, easy-to-read book discusses public relations from the standpoint of the individual physician in his everyday practice. Thus the public relations of American medicine is defined as "the sum total of the impressions that individual physicians register in the minds and hearts of their individual patients and friends."

The reader becomes a spectator at interestingly laid scenes showing the physician and his patient, his colleagues, his hospital, his professional society, his community, his prepayment plans, his office staff, and finally, the physician and the reader.

Although written specifically for physicians, the book contains much of interest to dentists, particularly those in private practice.

The book contains also a brief foreword by Louis H. Bauer, M.D., past president of the American Medical Association.

P. Goulding

ARREST OF BLEEDING. PHYSIOLOGY, PHARMACOLOGY, PATHOLOGY

By Jacques Roskam, M.D. 71 pages. Price $2.75. Springfield, Ill., Charles C Thomas, 1954.

This monograph discusses the results of an entirely new approach to the problem of bleeding. Having observed that the average bleeding time is a constant measurement in a patient under standardized conditions, the author devised a statistical method to study spontaneous hemostasis in experimental animals and man. With the help of this method, it is shown that Cannon's views about the maintenance of blood in mammals are not entirely correct.

The paradoxical effects of epinephrine as well as of many anesthetics on the bleeding time are explained. The hemostatic action of thrombin is discussed. Experiments with heparin give new proofs that prolonged bleeding times depend on the combined action of at least two hemorrhagic factors, one vascular, the other some disorder of the blood itself.

Applied to pharmacological problems, the new method discloses that vasoconstrictor substances and coagulants do not *ipso facto* shorten the bleeding time. Some of these drugs even prolong it in a significant way. Other drugs with the same fundamental prop-

erties favor the arrest of hemorrhage. Consequently, the latter group only may be termed hemostatic. Other hemostatics seem to reduce the bleeding time by their quinonic functions even if they are neither vasoconstrictors nor coagulants. Among new hemostatics thus discovered is adrenochrome, a product of the oxidation of epinephrine, which may be considered a physiological hemostatic.

The new method for studying spontaneous hemostasis has important consequences in therapeutics. It shows that a number of treatment methods must be discarded; among them the widespread use of cold, heat and bloodletting in the treatment of bleeding. However, preventive and curative treatments do result from pharmacological researches on bleeding time. These general treatments, as opposed to topical ones, are particularly intended for the hemorrhages which cannot be specifically or locally treated.

I. Newton Kugelmass, M.D.

HEALTHIER LIVING

By Justus J. Schifferes, Ph.D. 928 pages with illustrations. Index. Appendix. Price $6.75. New York, John Wiley & Sons, Inc., 1954.

Healthier Living, a basic college text on personal and community health, is designed to help the college student lead a fuller and happier life, both as an individual and as a member of society. Throughout the book the author stresses the social and psychological aspects of health and disease. This approach he calls the "multidisciplinary approach to sociopsychosomatic medicine."

The subject matter is divided into four major areas and then into 24 units. The four major areas are: "Education for Family Living," "Mental Health," "Personal Health" and "Community Health." The many short chapters make for greater flexibility in the use of the text. About 30 per cent of the text is devoted to sex education.

The section on dental health is interestingly written and covers the principal aspects of the subject in a general way. The author, however, takes issue with the generally accepted theory that sugar is an important factor in tooth decay. He says, "Sugar as a causative factor in the development of tooth decay has not been finally accepted by all dental authorities." It is true, of course, that there is not full agreement on the many factors involved in tooth decay nor is there full agreement on many medical and dental topics. It would seem foolhardy, however, to ignore everything that research has shown concerning sugar and dental caries.

The book could have been shortened by several hundred pages without losing its present effectiveness as a college health text.

P. Sandell

COLOR ATLAS OF PATHOLOGY

U. S. Naval Medical School of the National Naval Medical Center. Volume II. 450 pages with 1,032 figures in color on 343 plates. Index. Price $20. Philadelphia, J. B. Lippincott Co., 1954.

This is the second part of a superbly illustrated book on pathology. Effective pictures are accompanied by a brief but inclusive, authoritative text. Included in this volume are chapters on diseases of the endocrine system, gynecologic lesions, diseases of the breast, diseases of the male genital tract and diseases of the skin. A considerable proportion of the illustrations are of the gross lesions of these diseases.

As with the first volume, this book is the product of a team of workers and institutions whose "enduring loyalty," highly specialized skills and over-all ability made possible the first volume. The atlas is, of course, one of the outstanding works on pathology and one whose use is limited only by its cost. In spite of its cost, students of pathology and specialists in the subject can hardly afford to do without it. Practitioners will profit also by its regular use. The text is well written and easily followed. The paper, type and printing provide the best possible setting for the contents. Books like this are a great contribution to visual education.

Edward H. Hatton

TOOTH FORM DRAWING AND CARVING

By Russell C. Wheeler, D.D.S. Second edition. 106 pages with 124 illustrations. Price $4.50. Philadelphia, W. B. Saunders Co., 1954.

The opening chapter on nomenclature is excellent for the beginning dental student, hygienist, and assistant and will assist them greatly in understanding the rest of the book. New material has been added. The individual tooth forms are well done as are the drawings, with the exception of those showing the occlusal or incisal view which, from the dental students' standpoint, should be drawn in three dimensions. The third dimension is necessary for the student to transpose his knowledge of

tooth form into plaster or wax. For this reason, the drawings of the occlusal surfaces of the molar and bicuspid are inadequate.

The chapter on plaster sculpture is far superior to the corresponding chapter in the first edition and gives the student a concrete idea on the fashioning of a plaster or wax replica. The author has added a chapter on the carving of normal size teeth with photographs of typical teeth. This chapter is excellent. The closing chapter on basic occlusion is well done. The author has presented for the dental student photographs of models and natural specimens with normal occlusion.

The book is arranged systematically and is printed on good paper. It should be of value to the beginner in any phase of dentistry.

Robert E. Karper

HOSPITAL FORMULARY OF SELECTED DRUGS

By Don E. Francke. Second edition. 759 pages. Index. Price $5. Hamilton, Ill., The Hamilton Press, 1954.

This book is a hospital formulary of selected drugs prepared by the pharmacy and therapeutic committee of University Hospital, University of Michigan. It was designed as a readily accessible reference for members of medical and nursing staffs and others who use drugs. The committee, working in cooperation with the members of the medical staff, selected from the many agents available those drugs which are considered most useful therapeutically and the preparations in which these drugs may be administered effectively.

The material is logically arranged in alphabetical order according to indications, making it easy for the practitioner to find the medication he wants for a given purpose. Pertinent data on these drugs of proved value permits brief but thorough review of indications, dosage, reactions and methods to prevent or treat reactions. The medicinal agents are discussed in 24 chapters, beginning with the antihistamines, antiinfectives, antinauseants and antiemetics, continuing on alphabetically through cardiovascular drugs, enzymes, gastrointestinal drugs, local anesthetics, skin and mucous membrane preparations and vitamins. About 40 pages at the end of the book are devoted to general information. Included are the essentials of prescription writing, conversion and biochemical tables and antidotes.

This handy reference is a book shelf requisite for the practitioner who uses drugs in the treatment of his patients. The book permits rational drug therapy and makes possible the avoidance of indiscriminate use of every drug or combination produced by pharmaceutical manufacturers. Better patient care is thereby provided.

Herbert J. Bloom

INDICE DE LA LITERATURA DENTAL PERIODICA EN CASTELLANO Y PORTUGUES, 1952

Prepared in the Library of the Argentine Dental Association by the Commission on Indexing, F. A. Carranza, Jr., María Inés Egozcue, J. Erausquin, Margarita Muruzábal and P. Saizar. 88 pages. Buenos Aires, Asociación Odontológica Argentina, 1954.

This initial volume was sponsored by the Asociación Odontológica Argentina and compiled by a voluntary commission of professional men and women who saw the need for an index to the periodical dental literature in Spanish and Portuguese. Included are 48 periodicals, 42 in Spanish and six in Portuguese. There are 961 subject classifications, with 1,255 subject entries and 1,025 authors.

A list of books published during the period covered and the list of periodicals indexed, with abbreviations used, appear in the preliminary pages. Following the indexed material is an extensive explanation of the indexing methods used. The system as outlined follows closely that of the *Index to Dental Literature*, American Dental Association publication for periodical literature in the English language. Members of the Argentine commission consulted extensively with the staff of the Association Bureau of Library and Indexing Service during the preparation of the Spanish language index.

Classification headings are a Spanish translation of those employed in the *Index to Dental Literature*. It is suggested that for non-Spanish speaking users a copy of the subject classification headings, arranged alphabetically in English with Spanish translation following, be provided as a complement to the book. Such procedure would do much to eliminate the language problem.

The book is not large and is easy to handle. Paper stock is adequate and print is of a readable size. The Argentine Dental Association and the Index Commission are to be congratulated on their publication, which should prove a valuable tool in the dental libraries of the world.

Martha Ann Mann

HANDBOOK OF TREATMENT

By Harold Thomas Hyman, M.D. 511 pages. Index. Price $8. Philadelphia, J. B. Lippincott Co., 1955.

Because it is a real "working" aid, this volume is certain to have something of value to every practitioner. It provides practical and specific information on what to use and how to use it.

Disease conditions are considered in alphabetical order, making possible quick reference. The author follows a fixed routine in considering each disorder. He starts with a discussion of general principles, then gives procedures for immediate care and continuing care and breaks this last item down into routines to follow depending on whether the course is favorable or unfavorable. Among helpful features are specific page references to sections in the book where other aspects of the disease under discussion are considered, the generous use of tables in which treatment methods are evaluated, the tabulation of differential diagnosis and the special boxes in which main features of treatment are highlighted. Each discussion is supplemented by a "notes on the chart" series of cogent recommendations.

The author presents opinions undoubtedly concurred in by dentists in his discussion of dentifrices. His section on psychotherapy is especially recommended to all practitioners because of the soundness of its approach and the matter-of-fact presentation of helpful measures that can be employed by someone who is not a psychiatrist. The forthright evaluation of proprietary preparations is especially desirable.

There are 3,900 entries in the index of this volume, sufficient evidence that search for a specific entry will be rewarded. This volume is highly recommended as a practical, time-saving aid to orientation on treatment.

W. W. Bolton

WURZELBEHANDLUNG UND HERDERKRANKUNG

By Desider Hattyasy, Dr. Med. Second edition. 273 pages with 98 illustrations. Index. Leipzig, Germany, Johann Ambrosius Barth, 1955.

The author divides his book into two big chapters with many subdivisions. The first chapter deals with the theory of focal infection and its genesis. The pathological anatomic aspect of the focus is discussed extensively. Dr. Hattyasy describes in detail the pathways and the mechanism by which the infecting organism spreads from the primary focus to other tissues of the body, where secondary infections and other general effects are produced. The author repeatedly reminds the reader to consider the focus problem from a medical and biological point of view. He supports his warning by quoting the scientific research work of many outstanding men.

It is understandable, therefore, that his description in the second chapter of root canal treatment is worked out to the smallest detail. Dr. Hattyasy starts by describing forgotten and abandoned technics and compares them with the technics of today. He points out the importance of preventing the formation of a focus.

The accompanying photographs are descriptive. A good part of the international literature is covered. The book unquestionably is helpful to the dental student and practitioner.

Eugene Schorr

ORAL AND DENTAL DISEASES

By Hubert H. Stones, M.D. Third edition. 1,019 pages with 965 illustrations, 91 in color. Index. Price $18. Baltimore, Williams & Wilkins Co., 1954.

"This . . . publication" as its author states, "is devoted to diseases and injuries of the teeth and their investing tissues, the jaws and oral mucosa. Particular attention is paid to the aetiology, the histopathology and the more recent research, while the clinical features are fully described. Concise and yet precise instructions for treatment have been included. . . . Technical procedures coming within the field of routine Operative Dentistry are not discussed, except with regard to their effect on the dental tissues."

All the chapters in this third edition have been revised, and the chapter on diseases of the nervous system and muscles has been rewritten. The revision has necessitated adding 460 new references, which now total 2,625.

This large book deals fully and competently with oral and dental diseases. For example, a well-illustrated chapter entitled "Acute Infections of the Face and Neck that May Be of Oral Causation: Abscess and Cellulitis" fully describes the etiology of superficial and deep infections, the directions taken by these infections, and the various spaces where accumulations of pus are likely to form. In the discussion of the management of these cases, the use of antibiotics and the technics for incision and drainage are described.

Basic sciences are included in a helpful way to give more meaning to the clinical discussions. Each chapter is followed by an extensive bibliography. The book is profusely illustrated, and many of the cuts are in color.

These cuts are not always of high fidelity in respect to color, but all are informative and many are excellent.

The book is very readable, and the author has covered the material with unusual thoroughness. It is the reviewer's opinion that this is an excellent book on oral and dental diseases.

Warren R. Schram

PORPHYRINS: THEIR BIOLOGICAL AND CHEMICAL IMPORTANCE

By A. Vannotti. Translated from French by C. Rimington, Ph.D. 258 pages 12 figures and 15 plates. Index. Price 50s. net. London, Hilger & Watts, 1954.

The eight chapters of this book present an excellent critical summary for the clinician of the literature of porphyrins. The structures of porphyrins from blood, muscle, chlorophyll and others of the ubiquitous sources are given succinctly. Particular emphasis is placed on the optical properties of porphyrins since both identification of the various derivatives and diagnosis of the rare diseases associated with these compounds are facilitated by consideration of relations to light.

Citations to the presence of porphyrins in teeth, oral soft tissues and calculus are made based on reference to nine papers. None of these citations can be found by use of the meager index of one and a half pages. The best guide to the book is the table of contents.

An exhaustive alphabetized bibliography has been assembled at the end of the text. Entries have been grouped according to each chapter. Duplication of entries and some annoyance to the reader would have been avoided by use of a single listing. References as late as 1952 are cited.

The paper is of fair quality. The binding is excellent, but the title on the spine is printed upside down contrary to general practice in America.

Gerald J. Cox

THE STORY OF DENTISTRY

By M. D. K. Bremner, D.D.S. Third edition. 462 pages with 48 pages of illustrations. Index. Price not listed. Brooklyn, N. Y., Dental Items of Interest Publishing Co., Inc., 1954.

The Story of Dentistry is a compilation of material from many writers in the literature of dentistry. As told by the author the story is an interesting one. Beginning with a chapter "Tubercles to Teeth," the book continues with other chapters such as "The Roots of Modern Dentistry," "Professional Journalism," "Dentistry's Contribution to the Mastery of Pain," "The Specialties" and "Facts, Fads and Fraud in the Treatment of Pyorrhea."

In the photographic section are 47 illustrations, including 35 portraits of individuals who have contributed to the advancement of dentistry.

The chapter on dental journalism is an interesting study. Eleven dental journals between 1839 and 1869 are reported to have existed; seven of them are reviewed briefly. The evolution of dental journalism from trade to professional journalism is considered and some doubt expressed regarding the value of the change.

The author appears to be a little discouraged about the progress being made in periodontology. He says, "Present knowledge is little better than that possessed by Riggs 85 years ago."

The Story of Dentistry has much to recommend it. It should be of interest to any one wishing to inform himself of the history of dentistry.

Arthur H. Merritt

A DEVOTION TO NUTRITION

By Frederick Hoelzel. 88 pages. Price $2.50. New York, Vantage Press, Inc., 1954.

This is an unusual book recorded by an unusual man. The author, Frederick Hoelzel, was born in Bavaria and came to the United States as a child. Without benefit of any formal scientific training, he is now assistant in physiology at the University of Chicago.

This book is the recording of one individual's experiences in self-investigation. The story does not always conform to the accepted viewpoint but is worthy of consideration.

The author gives his life story nutritionwise for his 64 years of living. He has, on eight occasions, fasted for periods of from eight to 41 consecutive days. The first fasting experiment was made under observation at the University of Chicago in 1917. From that time on he has undergone continuous fasts, fasting every other day and fasting one out of three days. The same experiments at the same time were made on rats.

The book is best suited to those who are in a position to evaluate the results presented, such as students of nutrition, dietetics, dentistry and medicine. The story should stimulate further research into the area of appetite, hunger and fasting.

Pearl S. Camstra

Current Literature

THE EXPANDING FIELD OF ORAL SURGERY

James R. Cameron. J. Oral Surg. 13:3 Jan. 1955.

Oral surgery is the oldest specialty in dentistry, dating back to 1864. In 1946, a Board for Certification in Oral Surgery was founded through the efforts of the American Society of Oral Surgeons. The Board has maintained the attitude that to qualify for certification as oral surgeons, men should have a solid, fundamental training and not be merely skilled technicians. In September 1953 the House of Delegates of the American Dental Association unanimously passed a definition of the scope of oral surgery which said in part:

"The specialty of oral surgery is that part of dental practice which deals with the diagnosis, the surgical and adjunctive treatment of the diseases, injuries and defects of human jaws and associated structures. The scope of the specialty of oral surgery shall include the diagnosis and the surgical and adjunctive treatment of the diseases, injuries and defects of the human jaws and associated structures within the limits of the professional qualifications and training of the individual practitioner and within the limits of agreements made at the local level by the health team concerned with the total health care of the patient."

To fulfill the higher qualifications now required of oral surgeons, universities offer systematic and comprehensive graduate training programs. These programs cover a full academic year and are designed to present a well-correlated course in the basic sciences as applied to the practice of oral surgery.

On completion of the basic studies, the graduate dental student then serves two or more years on an accredited hospital oral surgery service. The resident in oral surgery associates closely with the residents in medicine and surgery and attends staff conferences where the treatment of patients is reviewed and evaluated.

This contact develops in him a broader concept of medico-dental problems, gains for him an intelligent approach to the understanding of various diseases and injuries and enhances his acumen as a diagnostician. He learns to value close cooperation between medicine and dentistry and to appreciate the important role of oral surgery in the prevention of disease, alleviation of human suffering and prolongation of human life.

As the field of oral surgery broadens and develops so, also, will the concept of dentistry as a health service broaden. As dentists specializing in oral surgery reach higher levels of service so, too, will general practitioners of dentistry improve their skills and knowledge to render better service to their communities.

James Springer

SURGICAL AIDS TO INTRAORAL PROSTHESIS

J. Orton Goodsell. J. Oral Surg. 13:8 Jan. 1955.

Surgical methods for the removal of intraoral interferences to successful prostheses are described and the technics are illustrated by diagrams and photographs. The technical descriptions include the treatment of sharp alveolar ridges, palatal and mandibular tori, sharp mylohyoid ridges, prognathism, soft tissue deformities, skin grafts and tissue supports.

Intraoral tissue is subject to many variations in contour, which in some instances prevent the normal seating of dentures. Surgery, when needed to produce satisfactory denture bases, should be employed. Evasion of the issue and circumvention can lead only to prosthetic failure. Many mouths, which at first glance may seem to present insurmountable difficulties, frequently can be made to be prosthetically acceptable by surgical intervention.

Extreme prognathism should be treated prior to extraction of teeth in order that the teeth may be used for splint attachments. Soft, flabby ridges, scar bands and tight muscle frenums, sulcus and buccal redundancies should be eliminated prior to denture construction. Sulcus-deepening operations, utilizing flaps or grafts, are successful in some instances. Mucous membrane flaps require supports in order to prevent shifting or the destructive results of hematoma formation. Pressure bandages are of value.

ANTIBIOTICS AND INTRAORAL BONE GRAFTS

Bernard M. Cohen. J. Oral Surg. 13:34 Jan. 1955.

Deformities resulting from the removal of large cysts and tumors of the jaws have been avoided by implantation of chip bone grafts

at the time of operation. These grafts have been autogenous and homogenous in type and are inserted through the oral approach.

It was found that exfoliation of the grafts did not necessarily occur if proper antibiotic coverage was instituted, treatment being based on information provided by smears, cultures and sensitivity tests. The period of healing was shorter and the bony architecture restored almost to normal. It is felt that the method warrants further investigation in view of the satisfactory results that have been achieved so far.

ILIAC AUTOPLASTY FOR REPAIR OF MANDIBULAR DEFECTS

J. R. Hayward and John P. Roffinella. J. Oral Surg. 13:44 Jan. 1955.

Unique features of structure and function constitute special problems in reconstructive surgery of the mandible. Defects of the mandible, therefore, require specific modifications in the principles of immobilization, preparation of fragments, choice of replacement bone and fixation of fragments. The healing of bone grafts is governed by the same biological principles through which fractures are united. The fragments must be replaced in normal alignment and maintained rigidly so that the biologic sequence of repair will restore normal form and function of the bone.

Proper preparation of both the patient and the operative site before grafting is important. Success of the procedure depends on the graft bed, which must have adequate blood supply and soft tissue covering without tension; the preparation of the margins of the bone for graft approximation; and complete fixation, with prolonged immobilization of the mandibular parts to be united by the graft. The material of choice is autoplastic bone from the iliac crest in the form of chip grafts or block section grafts.

The two theories of bone graft healing, the "revascularization theory" and the "replacement phenomenon," are explained. Four case reports illustrate the principles of bone graft operations.

The first case illustrates the utilization of bone grafts to restore defects in the mandible resulting from gunshot injury. Methods that can be utilized include the fixation of the parts and bone graft implantation. The second case illustrates a mandibular defect which resulted from a fracture that had been sustained during the extraction of a third molar and that was complicated by osteomyelitis. Fixation was accomplished in these two cases with metallic transosseous plates in combination with bone grafts.

The third case illustrates repair of a large defect from a neglected fracture of the mandible complicated by osteomyelitis and nonunion. The fourth case illustrates repair by iliac bone graft of a large mandibular defect from a self-inflicted gunshot wound. Management of this case was complicated by coexisting diabetes mellitis. In this case intraoral appliances were utilized to prevent collapse of the mandibular fragments and to maintain the fragments during the bone graft procedure.

UNTOWARD REACTION TO EFOCAINE: REPORT OF CASE

Harry M. Seldin, S. Daniel Seldin, William Rakower and Abbe J. Selman. J. Oral Surg. 13:66 Jan. 1955.

The need for a prolonged local anesthetic that can be used in dentistry has been recognized for some time. Such an anesthetic would be of great benefit for the relief of (1) persistent pain and discomfort which may follow oral surgical procedures, (2) pain of trigeminal neuralgia, and (3) pain resulting from a malignant growth or its treatment. The ideal prolonged local anesthetic should be easily administered, effective, have a low toxicity, be compatible with the tissues and be safe to administer.

Efocaine is a long-acting local anesthetic. Recent published reports in the medical literature indicate that Efocaine is not without danger. Neurological symptoms, postinjection neuritis and pain, tissue sloughs and neuralgia have been reported after its use.

In the case reported here, a serious and acute episode followed the injection of 1.5 cc. of Efocaine into the pterygomandibular space. The Efocaine was injected in an attempt to control the pain resulting from the removal three days earlier of an impacted lower third molar.

About five or six hours after the injection, pain was experienced. The pain became progressively worse and was associated with trismus. About eight hours after the injection, a stiffness of the neck and inability to rotate the head developed. In addition, swallowing became difficult. At the same time the patient experienced shortness of breath, chills, pallor and general malaise. Shortly after, the eyes began to tear excessively and the patient became extremely apprehensive.

Almost 24 hours later, after applying heat to the outside of the face and neck and after the use of codeine and morphine, considerable

improvement was evident. The symptoms slowly subsided over a period of a week.

Because of the unfavorable reports in the medical literature and the undesirable side effects the use of Efocaine for pain relief in dentistry is questionable.

TUBERCULOSIS OF THE MANDIBLE: REPORT OF CASE

Conrad J. Spilka. J. Oral Surg. 13:68 Jan. 1955.

The tuberculous lesion may occur in the soft tissues and in the bony supporting foundation structures of the mouth. It is generally agreed that oral lesions usually are a manifestation of a pulmonary involvement. The mandible shows a greater predisposition to this infection than the maxilla. Bony involvement is thought to result from extension from the investing soft tissues, although in the case reported there was no evidence of any soft tissue lesion. It was only after a biopsy was taken that a definite diagnosis was made.

The first noticeable symptoms the patient reported were enlargement of the left side of the mandible, general malaise, severe generalized headaches and weakness. This condition was sufficiently severe to require bed rest on several occasions. Despite treatment by his family physician, the patient's general malaise and fever persisted. His temperature usually increased during the day until it had reached 103° F. between 4 and 8 P.M. Remission occurred in the morning, but the temperature never returned to normal.

In the first operation, a biopsy was performed under local anesthesia. The pathologist reported a diagnosis of tuberculous lymphadenitis and tuberculous osteomyelitis.

In the second operation, under general anesthesia, a block section encompassing the tubercular portion of the mandible was removed. The recovery was uneventful. The patient was seen postoperatively at six month intervals, and there was no evidence of recurrence of the disease.

ODONTOGENIC FIBROMA: REPORT OF CASE

Karl W. Bruce and Kenneth D. Devine. J. Oral Surg. 13:73 Jan. 1955.

Fibromas of the jaws which are derived from the dental system are necessarily developed from the mesenchymal portion of the tooth germ. Thoma and Goldman have suggested that these tumors originate from the embryonic tissue in the dental papilla, from the dental follicle and later from the periodontal membrane. These tumors may appear at the coronal or the apical portion of the tooth.

A case of odontogenic fibroma which developed in the follicle of an unerupted six-year molar of a five year old child is reported.

Histopathologically, an odontogenic fibroma may consist of a solid mass of embryonal connective tissue which contains small spindle and stellate cells. Other odontogenic fibromas, however, may become more differentiated and may exhibit a considerable amount of collagen with fewer spindle-shaped fibroblasts, as in the case described.

It is a great help in making the diagnosis of fibroma of odontogenic origin if a few strands or rosettes of enamel-organ epithelium are included in the section. The enamel epithelial debris is an unimportant biologic part of the tumor and should be present in no greater amounts than would be observed in the follicles of unerupted teeth.

Deaths

Abbey, Theodore H., Atlanta; died October 5; aged 87.

Ackerman, Morris L., Chicago; College of Dentistry, University of Iowa, 1944; died December 31; aged 41.

Allen, Fred J., Chesaning, Mich.; College of Dental Surgery, University of Michigan, 1902; died January 5; aged 75.

Alstadt, Benjamin, New York; College of Dental and Oral Surgery, New York, 1916; died October 30; aged 59.

Barden, Herbert F., Buffalo; School of Dentistry, University of Buffalo, 1916; died December 26; aged 61.

Barnes, Raleigh P., Waterford, Pa.; College of Dentistry, Western Reserve University, 1907; died November 3; aged 70.

Bateman, John K., Tyler, Texas; Texas Dental College, Houston, 1915; died September 28; aged 64.

Baumgartner, Ira Gara, Saratoga, Calif.; died October 23; aged 89.

Baumgartner, John F., West Bend, Wis.; Dental School, Marquette University, 1915; died December 9; aged 62.

Baxter, James L., Orange, N. J.; School of Dentistry, University of Pennsylvania, 1907; died December 9; aged 74.

Beeson, Orrin L., Beatrice, Neb.; Chicago College of Dental Surgery, Loyola University, 1900; died September 3; aged 85.

Behrle, Raymond A., Louisville, Ky.; School of Dentistry, University of Louisville, 1908; died December 2; aged 74.

Bevil, Cooper, P., Beaumont, Texas; Southern Dental College, Atlanta, 1908; died July 20; aged 71.

Bingham, Joel W., Casper, Wyo.; Chicago College of Dental Surgery, Loyola University, 1900; died November 11; aged 75.

Blakey, Ernest M., St. Louis; died September 24; aged 79.

Bleyer, Adolph, Brooklyn; New York College of Dentistry, 1897; died December 2; aged 78.

Blutau, Theodore C., Rochester, N. Y.; School of Dentistry, University of Buffalo, 1921; died December 27; aged 55.

Boucher, William E., West Hartford, Conn.; Baltimore College of Dental Surgery, University of Maryland, 1900; died November 24; aged 84.

Bragg, Laurence A., Norfolk, Va.; Baltimore College of Dental Surgery, University of Maryland, 1901; died December 11; aged 79.

Brandenburg, Oscar R., Milwaukee; Chicago College of Dental Surgery, Loyola University, 1912; died December 30; aged 64.

Brennan, William A., Austin, Minn.; School of Dentistry, University of Denver, 1920; died December 21; aged 57.

Briney, Ross W., Pittsburgh; School of Dentistry, University of Pittsburgh, 1910; died December 5; aged 68.

Brooks, Benjamin L., Lynchburg, Va.; Dental Department, University College of Medicine, Richmond, 1910; died November 22; aged 68.

Brown, Bradford T., Chicago; College of Dentistry, University of Illinois, 1922; died January 2; aged 57.

Bullock, Charles F., Newark, N. Y.; School of Dentistry, University of Buffalo, 1905; died in December; aged 54.

Burns, James F. R., Trenton, N. J.; Baltimore College of Dental Surgery, University of Maryland, 1930; died January 7.

Cain, Martin J., Cheboygan, Mich.; Department of Dental Surgery, Detroit College of Medicine, 1907; died November 10; aged 81.

Caputo, John A., New York; New York College of Dentistry, 1924; died December 17; aged 56.

Caradine, Harold B., Monroe, Wis.; Dental School, Northwestern University, 1916; died January 24; aged 63.

Cash, Riley B., Kansas City, Mo.; School of Dentistry, Washington University, St. Louis, 1925; died December 4; aged 54.

Castaldi, Feliciano V., Woodbury, N. J.; School of Dentistry, Temple University, 1934; died December 31.

Cavanagh, George L., Watertown, N. Y.; School of Dentistry, University of Pittsburgh, 1918; died January 1; aged 61.

Chester, Hubert M., Buffalo; New York Dental School, 1896; died September 15; aged 81.

Cohen, Gabriel, New York; College of Dentistry, New York University, 1922; died November 13; aged 55.

Cole, Hazen P., Ithaca, Mich.; College of Dental Surgery, University of Michigan, 1924; died October 26; aged 53.

Collins, Joseph B., Detroit; Dental School, Marquette University, 1927; died November 20; aged 49.

Condit, C. H., Gilman, Ill.; died January 5; aged 81.

Cooperstein, Louis, Seattle; School of Dentistry, North Pacific College of Oregon, Portland, 1913; died October 4; aged 68.

Cotterell, John M., Houston, Texas; Texas Dental College, Houston, 1929; died January 4; aged 52.

Crane, Charles W., Lynn, Mass.; Dental School, Harvard University, 1896; died January 9; aged 82.

Cunningham, Napoleon A., Defiance, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1909; died November 9; aged 67.

Danhauer, Max P., Louisville, Ky.; Dental School, Northwestern University, 1914; died December 29; aged 66.

Davidson, Norman L., Raymondville, Texas; Marion-Sims Dental College, St. Louis, 1900; died September 30; aged 79.

DaVolt, Darwin E., Denver; School of Dentistry, University of Denver, 1919; died August 14; aged 69.

Dennis, William E., Euclid, Ohio; College of Dentistry, Ohio State University, 1928; died January 15; aged 54.

Diepenbrock, George W., Red Wing, Minn.; Chicago College of Dental Surgery, Loyola University, 1899; died November 16; aged 79.

Dittrich, Charles A., Shelby, Mont.; Barnes Dental College, St. Louis, 1915; died November 12; aged 68.

Dixon, Robert H., Austin, Texas; Texas Dental College, Houston, 1930; died April 27, 1954; aged 52.

Dolan, Charles E., Boston; Dental School, Tufts College, 1928; died November 21; aged 50.

Doman, Edward E., Springfield, Mass.; School of Dentistry, Georgetown University, 1947; died November 14; aged 31.

Dunn, Howard, Oakland, Calif.; College of Physicians and Surgeons, San Francisco, 1916; died January 20; aged 61.

Durant, Edward W., Georgetown, S. C.; Atlanta Dental College, 1908; died December 31; aged 71.

Durham, James R., Columbia, S. C.; Atlanta Dental College, 1905; died December 31.

Eagleson, James H., West Salem, Ill.; Ohio College of Dental Surgery, University of Cincinnati, 1900; died August 8; aged 78.

Edington, Isaac C., Rockville Centre, N. Y.; College of Dentistry, Howard University, 1890; died December 25; aged 90.

Elliott, John R., Warren, Pa.; School of Dentistry, University of Pittsburgh, 1924; died January 17; aged 54.

Embler, Ralph, Mount Vernon, N. Y.; School of Dentistry, University of Pennsylvania, 1910; died November 1; aged 75.

Everett, Melville M., Geneseo, Ill.; Chicago College of Dental Surgery, Loyola University, 1899; died December 26; aged 84.

Ewell, Lucius F., Gulfport, Miss.; School of Dentistry, Vanderbilt University, 1925; died December 21; aged 55.

Ewing, Robert M., Philadelphia; Medico-Chirurgical College of Philadelphia, 1900; died January 17; aged 82.

Ferner, Daniel A. J., Fort Recovery, Ohio; Columbian Dental College, Chicago, 1895; died November 20; aged 88.

Fleming, George K., Carthage, Ill.; Dental School, Northwestern University, 1901; died December 2; aged 78.

Francisco, Winn O., Port Arthur, Texas; Dental School, Northwestern University, 1919; died July 10; aged 65.

Gibboney, Emerson T., West Union, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1916; died November 6; aged 59.

Glitzke, Ewald C., Kansas City, Mo.; Western Dental College, Kansas City, 1916; died January 26; aged 67.

Goldenberg, David K., New York; College of Dentistry, New York University, 1927; died November 21; aged 51.

Graboff, Edward, New York; New York College of Dentistry, 1907; died September 10; aged 66.

Graham, Percy B., Republic, Kan.; Kansas City Dental College, 1905; died January 25; aged 77.

Greene, Pardee W., Sioux Falls, S. D.; Chicago College of Dental Surgery, Loyola University, 1903; died November 18; aged 76.

Griffin, John M., Hollywood, Calif.; College of Dentistry, University of Southern California, 1927; died January 18; aged 51.

Gunderson, Julius L., Kenyon, Minn.; College of Dentistry, University of Minnesota, 1902; died November 26; aged 76.

Hamilton, Frank D., Columbus, Ohio; Department of Dentistry, Starling-Ohio Medical College, 1910; died January 25; aged 68.

Hanna, Harry L., Brewster, Ohio; College of Dentistry, Ohio State University, 1925; died November 28; aged 59.

Harrington, Ambrose B., Rock Hill, Mo.; School of Dentistry, St. Louis University, 1918; died December 11; aged 60.

Hart, Robert L., Tampa, Fla.; Southern Dental College, Atlanta, 1911; died February 4; aged 65.

Hasleton, Harvey B., Des Moines, Iowa; Chicago College of Dental Surgery, Loyola University, 1908; died August 16; aged 68.

Heatherley, William E., Topeka, Kan.; School of Dentistry, Washington University, St. Louis, 1896; died January 29; aged 82.

Hill, Keene M., Burkesville, Ky.; died December 29.

Hill, William L., Owego, N. Y.; Philadelphia Dental College, 1895; died November 17; aged 84.

Hirschberg, Nathan, St. Louis; School of Dentistry, Washington University, St. Louis, 1904; died December 8; aged 72.

Holdren, Herbert T., Salina, Kan.; Cincinnati College of Dental Surgery, 1900; died January 12; aged 81.

Hoorn, Karl H., Huntington Park, Calif.; died January 30; aged 75.

Hughes, Paul J., Cleveland; died November 2; aged 59.

Hunter, George H., Frankfort, Ohio; died November 9; aged 79.

Ivins, Orville R., Crawford, Neb.; Omaha Dental College, 1903; died October 9; aged 73.

Jackman, Louis F. J., Cleveland; College of Dentistry, Western Reserve University, 1909; died December 18; aged 70.

Josephson, Joseph, Brooklyn; died November 29; aged 70.

Kearns, James W., Alhambra, Calif.; died February 2; aged 54.

Keeffe, Edmond D., San Francisco; College of Dentistry, University of California, 1897; died February 11; aged 80.

Kohler, Milton C., Johnstown, Pa.; New York Dental College, 1896; died November 11; aged 86.

Krueger, George E., Chicago; Dental School, Northwestern University, 1901; died September 20; aged 76.

Laurence, Maurice P. A., New York; New York College of Dentistry, 1924; died January 6; aged 62.

Lipton, Aaron, Jackson Heights, N. Y.; died December 11; aged 60.

Lyle, John E., Tyler, Texas; died July 14; aged 72.

Magnuson, Homer N., Stillwater, Minn.; Dental School, Northwestern University, 1917; died November 2; aged 59.

Martin, Arthur D., Fort Meade, S. D.; Kansas City-Western Dental College, 1940; died December 4; aged 39.

Martin, Paul A., Spencerport, N. Y.; School of Dentistry, University of Buffalo, 1917; died September 10; aged 59.

Mathers, Edwin F., Denver; School of Dentistry, University of Colorado, 1928; died December 6; aged 53.

Mauch, Willard O., Mason City, Iowa; College of Dentistry, University of Iowa, 1918; died September 2; aged 59.

McAtee, Frank F., Twin Falls, Idaho; Colorado College of Dental Surgery, 1901; died January 30; aged 78.

McConnaughey, Ralph O., Denison, Iowa; College of Dentistry, University of Iowa, 1904; died August 17; aged 76.

McGowan, James E., Pomona, Calif.; died January 15; aged 86.

McKelvey, Samuel N., Orlando, Fla.; died October 20; aged 69.

McMillan, Hugh W., Roseville, Ill.; Chicago College of Dental Surgery, Loyola University, 1896; died November 9; aged 85.

Meredith, Leslie J., Wilmington, N. C.; Atlanta Dental College, 1912; died October 4; aged 67.

Miller, Frank M., Roseville, Calif.; College of Dentistry, University of Minnesota, 1914; died January 24; aged 65.

Moore, William G., Seattle; Dental School, Northwestern University, 1905; died January 19; aged 74.

Murphy, Robert B., Chicago; Indiana Dental College, 1907; died in February; aged 83.

Neil, Ewell P., Nashville, Tenn.; School of Dentistry, Vanderbilt University, 1903; died January 9; aged 76.

Nelson, John D., Willoughby, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1900; died January 6; aged 75.

Neville, Henry O., St. Louis; School of Dentistry, Washington University, St. Louis, 1907; died December 19; aged 69.

Nolander, Walter A., Riverdale, N. Y.; School of Dental and Oral Surgery, Columbia University, 1922; died December 18; aged 66.

Ovelman, Charles H., Hollidaysburg, Pa.; School of Dentistry, University of Pennsylvania, 1908; died October 27; aged 71.

Palmer, Claude D., Stanton, Neb.; College of Dentistry, Creighton University, 1908; died October 18; aged 69.

Parish, Jessie A., Cedar Falls, Iowa; College of Dentistry, University of Iowa, 1915; died August 10; aged 71.

Peebles, G. H., Jackson, Miss.; Atlanta Dental College, 1910; died August 31; aged 65.

Power, Roscoe B., Green Bay, Wis.; Chicago College of Dental Surgery, Loyola University, 1898; died October 2; aged 77.

Richert, Jean A., San Francisco; College of Physicians and Surgeons, San Francisco, 1914; died January 14; aged 70.

Roush, Sigel, Hillsboro, Ohio; Dental Department, Columbian University, 1892; died December 15; aged 92.

Directory

OFFICERS

Daniel F. Lynch, President.....1678 Primrose Road, N.W., Washington, D.C.
Bernerd C. Kingsbury, President-Elect.....490 Post St., San Francisco
Curtis A. Haggard, First Vice-President.....1202 Huntington Bldg., Miami, Fla.
Frederick W. Herbine, Second Vice-President.....230 N. Fifth St., Reading, Pa.
John E. Fauber, Third Vice-President.....Veterans Administration, Washington, D.C.
Harry Lyons, Speaker, House of Delegates...School of Dentistry, Medical College of Virginia, Richmond, Va.
Harold Hillenbrand, Secretary.....222 E. Superior St., Chicago
C. Willard Camalier, Assistant Secretary.....1726 Eye St., N.W., Washington, D.C.
Louis M. Cruttenden, Assistant Secretary.....222 E. Superior St., Chicago
H. B. Washburn, Treasurer.....Lowry Medical Arts Bldg., St. Paul
Lon W. Morrey, Editor.....222 E. Superior St., Chicago

BOARD OF TRUSTEES

John R. Abel, 1957, Thirteenth District.....405 N. Bedford Drive, Beverly Hills, Calif.
William R. Alstadt, 1957, Twelfth District.....610 Boyle Bldg., Little Rock, Ark.
Percy T. Phillips, 1957, Second District.....18 E. 48th St., New York
Clarence S. Renouard, 1957, Eleventh District.....304 Phoenix Bldg., Butte, Mont.
Howard B. Higgins, 1956, Fifth District.....Montgomery Bldg., Spartanburg, S.C.
L. H. Jacob, 1956, Eighth District.....Jefferson Bldg., Peoria, Ill.
Paul H. Jeserich, 1956, Ninth District.....School of Dentistry, University of Michigan, Ann Arbor, Mich.
Charles H. Patton, 1956, Third District.....235 S. 15th St., Philadelphia
Edward R. White, 1956, Fourth District.....921 Bergen Ave., Jersey City
Earl G. Jones, 1955, Seventh District.....185 E. State St., Columbus, Ohio
A. F. Schopper, 1955, Sixth District.....914 Professional Bldg., Kansas City, Mo.
Charles I. Taggart, 1955, First District.....139 Bank St., Burlington, Vt.
Lewis W. Thom, 1955, Tenth District.....1546 Medical Arts Bldg., Minneapolis

BUREAUS

Dental Health Education: Perry J. Sandell, Director, 222 E. Superior St., Chicago
Economic Research and Statistics: B. D. Moen, Director, 222 E. Superior St., Chicago
Library and Indexing Service: Donald A. Washburn, Director, 222 E. Superior St., Chicago
Public Information: Herbert B. Bain, Director, 222 E. Superior St., Chicago

COUNCILS

Constitution and Bylaws: F. A. Pierson, Chm., 1112 Federal Securities Bldg., Lincoln, Neb.
Dental Education: Philip E. Blackerby, Chm., W. K. Kellogg Foundation, Battle Creek, Mich.
Shailer Peterson, Secy., 222 E. Superior St., Chicago
Dental Health: David W. Brock, Chm., 6026 Enright Ave., St. Louis
R. H. Friedrich, Secy., 222 E. Superior St., Chicago

Dental Research: M. K. Hine, Chm., 1121 W. Michigan St., Indianapolis
H. Trendley Dean, Secy., 222 E. Superior St., Chicago

Dental Therapeutics: Lester W. Burket, Chm., 4001 Spruce St., Philadelphia
J. Roy Doty, Secy., 222 E. Superior St., Chicago

Dental Trade and Laboratory Relations: Walter E. Dundon, Chm., 111 N. Wabash Ave., Chicago

Federal Dental Services: F. J. Reichmann, Chm., Medical Arts Bldg., Oklahoma City, Okla.

Hospital Dental Service: Frank B. Hower, Chm., 814 Heyburn Bldg., Louisville, Ky.
Gerard J. Casey, Secy., 222 E. Superior St., Chicago

Insurance: J. S. Eilar, Chm., 7 Medical Arts Square, Albuquerque, N. Mex.
Paul W. Zillmann, Secy., 29 Walden Ave., Buffalo

International Relations: O. A. Oliver, Chm., 1915 Broadway, Nashville, Tenn.

Journalism: W. L. Barnum, Chm., Morgan Bldg., Portland, Ore.

Judicial: H. B. McCarthy, Chm., College of Dentistry, Baylor University, Dallas, Texas

Legislation: Paul E. Jones, Chm., 3 E. Church St., Farmville, N.C.
Bernard J. Conway, Secy., 222 E. Superior St., Chicago

Membership: J. R. Wallace, Chm., 31 Church St., Winchester, Mass.

National Board of Dental Examiners: Victor L. Steffel, Chm., 19 W. Fifth Ave., Columbus, Ohio
Gerard J. Casey, Secy., 222 E. Superior St., Chicago

Registry of Dental and Oral Pathology: Kurt H. Thoma, Chm., 1180 Beacon St., Brookline, Mass.

Relief: M. C. Hansen, Chm., 420 Seventh St., Racine, Wis.

Scientific Session: Charles S. Kurz, Chm., 550 N. Eighth St., Carlyle, Ill.

SECTION CHAIRMEN

Operative Dentistry: Arne F. Romnes, 55 E. Washington St., Chicago

Oral Surgery and Anesthesia: Samuel A. Brandon, 620 Medical Dental Bldg., Portland, Ore.

Orthodontics and Oral Development: William S. Brandhorst, 4952 Maryland Ave., St. Louis

Pedodontics: Maury Massler, 808 S. Wood St., Chicago

Periodontics: James P. Hollers, 4600 Broadway, San Antonio, Texas

Practice Administration: Hollis A. Askey, 715 Sharp Bldg., Lincoln, Neb.

Prosthodontics, Complete: W. Leslie Warburton, Medical Arts Bldg., Salt Lake City

Prosthodontics, Partial: Otto W. Silberhorn, 311 E. Chicago Ave., Chicago

Public Health Dentistry: George B. Clendenin, 4406 East West Highway, Bethesda, Md.

Research: David F. Mitchell, 3639 47th Ave., S., Minneapolis

Roentgenology: William E. Koch, Jr., 615 Metropolitan Bldg., St. Louis

THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION
222 East Superior Street, Chicago 11, Illinois
WHitehall 4-6730

LON W. MORREY, *Editor* JOHN J. HOLLISTER, *Business Manager*

All expressions of opinion and all statements of supposed fact are published on the authority of the writer over whose signature they appear and are not to be regarded as expressing the views of the American Dental Association, unless such statements or opinions have been adopted by the Association. *Articles* are accepted with the understanding that they have not been published previously and that they are submitted solely to THE JOURNAL. *Advertising copy* must conform to the official standards established by the American Dental Association. *Notice of change of address* should be received one month before the change is to be effective. *Orders for reprints of* JOURNAL articles must be received by the Business Manager's office not later than the 15th of the month of issue in order to secure advantage of the lowest possible prices. Orders received after this date are subject to special quotation.

Announcements

MEETINGS OF THE AMERICAN DENTAL ASSOCIATION

Ninety-Sixth Annual Session	Oct. 17-20, 1955	San Francisco
Ninety-Seventh Annual Session	Oct. 1-4, 1956	Atlantic City, N. J.
Ninety-Eighth Annual Session	Nov. 4-7, 1957	Miami, Fla.
Ninety-Ninth Annual Session	Nov. 10-13, 1958	Dallas, Texas
One-Hundredth Annual Session	Sept. 21-24, 1959	New York

MEETINGS OF CONSTITUENT SOCIETIES

State	Date	Place	Secretary	Address
Alabama	Apr. 14-16, 1956	Biloxi, Miss.	F. A. Finney, Jr.	1015 Forrest Ave., Gadsden
Alaska	June 26-30	Juneau	R. M. MacKenzie	207 Mendenhall Apts., Juneau
Arizona			R. W. Christensen	17 E. Weldon Ave., Phoenix
Arkansas		Little Rock	D. M. Hamm	Box 89, Clarksville
California	Apr. 23-25, 1956	San Francisco	W. J. Healy	450 Sutter St., San Francisco
S. California			J. P. Bowers	124 W. Lime Ave., Monrovia
Colorado	Oct. 2-5	Colorado Springs	W. R. Humphrey	724 Republic Bldg., Denver
Connecticut			E. S. Arnold	37 Linnard Rd., W. Hartford
Delaware			R. V. Reed, Jr.	Medical Arts Bldg., Wilmington
District of Columbia	Mar. 11-14, 1956	Washington	Z. B. Lloyd	2007 R St., N.W., Washington
Florida			J. E. Edwards	152 Alhambra Circle, Coral Gables
Georgia	Oct. 2-5	Atlanta	J. W. Yarbrough	Bibb Bldg., Macon
Hawaii	June 15-18	Honolulu	J. H. Dawe	810 N. Vineyard St., Honolulu
Idaho			F. O'Halloran	Box 703, Coeur d'Alene
Illinois			P. W. Clopper	623 Jefferson Bldg., Peoria
Indiana			D. C. Barnhill	400 Bankers Trust Bldg., Indianapolis
Iowa			H. I. Wilson	639 Insurance Exchange Bldg., Des Moines
Kansas			F. A. Richmond	861 Brotherhood Bldg., Kansas City
Kentucky	Apr. 8-11, 1956	Louisville	A. B. Coxwell, Jr.	1976 Douglass Blvd., Louisville
Louisiana	Apr. 11-14, 1956	Alexandria	J. S. Bernhard	2515 Line Ave., Shreveport
Maine	June 23-35	Rockland	S. M. Gower	Box 27, Skowhegan
Maryland			E. L. Pessagno, Jr.	415 Medical Arts Bldg., Baltimore
Massachusetts			H. E. Tingley	12 Bay State Rd., Boston
Michigan			F. Wertheimer	Michigan Dept. of Health, Lansing
Minnesota	Apr. 23-25, 1956	St. Paul	C. V. E. Cassel	225 Hamm Bldg., St. Paul
Mississippi			B. A. Cohen	306 Plaza Bldg., Jackson
Missouri			E. D. Suggett	201 Merchants Bank Bldg., Jefferson City
Montana			E. G. Vedova	Box 311, Roundup
Nebraska			F. A. Pierson	1112 Federal Securities Bldg., Lincoln
Nevada	June 10-12	Lake Tahoe	O. M. Seifert	506 Humboldt St., Reno
New Hampshire	June 12-14	Whitefield	F. E. Williams	814 Elm St., Manchester
New Jersey	Apr. 22-26, 1956	Atlantic City	J. G. Carr	407 Cooper St., Camden
New Mexico			J. S. Eilar	Medical Arts Square, Albuquerque
New York			C. A. Wilkie	1 Hanson Place, Brooklyn
North Carolina			R. D. Coffey	Kibler Bldg., Morganton
North Dakota			V. B. Keltgen	517 de Lendrecie Bldg., Fargo
Ohio	Nov. 13-16	Cleveland	E. G. Jones	185 E. State St., Columbus
Oklahoma			S. A. Russman	809 Medical Arts Bldg., Oklahoma City
Oregon	Mar. 5-7, 1956	Portland	T. D. Holder	308 Selling Bldg., Portland
Panama Canal Zone			A. G. Jennings	Box 583, Fort Kobbe
Pennsylvania			M. D. Zimmerman	217 State St., Harrisburg
Puerto Rico			M. A. Rosso	Box 9023, San Juan
Rhode Island	Jan. 17, 18, 1956	Providence	W. D. MacIntosh	506 Industrial Bank Bldg., Providence

State	Date	Place	Secretary	Address
South Carolina			J. R. Owings	7 Medical Court, Greenville
South Dakota			L. N. Thelen	229 S. Prairie St., Sioux Falls
Tennessee			A. M. Ballentine	Pulaski
Texas			W. Ogle	3607 Gaston Ave., Dallas
Utah	May 17-19, 1956	Salt Lake City	R. C. Dalgleish	124 State Capitol Bldg., Salt Lake City
Vermont			W. J. Reardon	18 Madison St., Rutland
Virginia			W. T. McAfee	705 Colonial National Bank Bldg., Roanoke
Washington			W. B. Martin	Medical-Dental Bldg., Seattle
West Virginia	July 24-27	White Sulphur Springs	G. N. Casto, Jr.	710½ Lee St., Charleston
Wisconsin			A. E. Kopp	Wells Bldg., Milwaukee
Wyoming	June 16-18	Cheyenne	T. J. Drew	State Office Bldg., Cheyenne

MEETING OF STATE BOARDS OF DENTAL EXAMINERS

State	Date	Place	Secretary	Address
Alabama	June 20-24*	Birmingham	W. L. McCarty	200 Professional Center, Montgomery
	June 20, 21†			
Alaska			R. H. Williams	Box 2122, Juneau
Arizona	June 20-26*†‡		R. K. Trueblood	107 East A Ave., Glendale
Arkansas	June 20-24*†	Little Rock	H. O. Weatherly	205 Halter Bldg., Conway
California	June 20	Los Angeles	T. E. Tilden	Medico-Dental Bldg., Sacramento
	July 25	San Francisco		
Colorado	June 20-24	Denver	J. M. Peabody	724 Republic Bldg., Denver
Connecticut	June 19-25*†	New York	C. G. Brooks	302 State St., New London
		Bridgeport		
Delaware	June 27-29	Wilmington	P. K. Musselman	143 W. Main St., Newark
District of Columbia			W. T. Birthright	Suite 718, 1835 Eye St., N.W., Washington
Florida	July 11-21*†	Jacksonville	A. W. Kellner	P. O. Box 155, Hollywood
Georgia			P. M. McNeil	307 First National Bank Bldg., Rome
Hawaii	Sept. 1, 2, 4, 5*†‡		H. L. Houvener	427 Dillingham Bldg., Honolulu
Idaho	June 27-30‡		R. E. Bickenstaff	1023 Fourth St., S., Nampa
Illinois	June 21-24	Chicago	W. A. McKee	503 Wood Bldg., Benton
Indiana	June 14-17*†	Indianapolis	C. A. Frech	Gary National Bank Bldg., Gary
Iowa			D. J. FitzGerald	615 Brick & Tile Bldg., Mason City
Kansas	June 6-9	Kansas City, Mo.	G. L. Teall	Box 71, Hiawatha
Kentucky	June 6-9	Louisville	R. M. Justice	1330 Central Ave., Ashland
Louisiana	June 5-10	New Orleans	R. C. Steib	833 Maison Blanche Bldg., New Orleans
Maine	June 20-22	Boston	R. A. Derbyshire	Box 387, Skowhegan
Maryland	June 6-8‡		H. Levin	3429 Park Heights Ave., Baltimore
Massachusetts	June 13-16*†		G. J. Fink	Rm. 33, State House, Boston
	June 15, 16†‡			
Michigan	June 5-11	Ann Arbor	J. L. Champagne	3714 W. McNichols Rd., Detroit
Minnesota	June 13-17*†‡		M. G. Walls	615 Montcalm Place, St. Paul
Mississippi	June 21-23	Jackson	J. C. Boswell	508 Lamar Life Bldg., Jackson
Missouri	June 13-18	St. Louis	R. R. Rhoades	414 Central Trust Bldg., Jefferson City
		Kansas City		
Montana	July 11-14*†	Helena	V. J. Quinn	301 Phoenix Bldg., Butte
Nebraska	June 13	Lincoln	H. E. Weber	1210 Federal Securities Bldg., Lincoln
Nevada	June 13	Reno	R. Whitehead	Suite 6, Masonic Temple, Reno
New Hampshire	June 17, 18	Boston	S. G. Markos	8 Renaud Ave., Dover
	June 17†‡			
New Jersey	June 1, 2*	Philadelphia	W. A. Wilson	150 E. State St., Trenton
	June 8, 9*†	New York		
	June 13, 14*	Trenton		
New Mexico	June 20-23	Santa Fe	J. J. Clarke, Sr.	Artesia
New York			D. W. Beier	23 S. Pearl St., Albany
North Carolina	June 27-July 1	Chapel Hill	F. O. Alford	1107 Liberty Life Bldg., Charlotte
North Dakota	June 20-24	Fargo	A. L. Pushor	Lisbon
Ohio	June 16-18	Columbus	H. B. Smith	322 E. State St., Columbus
	June 20-22			
Oklahoma	June 16-18‡		R. P. Keidel	403 Surety Bldg., Muskogee

State	Date	Place	Secretary	Address
Oregon	June 6-9*†	Portland	F. L. Utter	506 Pioneer Trust Bldg., Salem
Pennsylvania	June 20-25	Philadelphia	A. M. Stinson	Dept. of Public Instruction, Box 911, Harrisburg
	June 20-22	Pittsburgh		
Puerto Rico			J. Mercado C.	Box 3717, Santurce
Rhode Island			F. M. Hackett	267 Academy Ave., Providence
South Carolina	June 16-18	Columbia	T. C. Sparks	1315 Pickens St., Columbia
South Dakota	June 19-22*†‡		H. T. Aker	Canton
Tennessee	June 13-17‡		C. R. Alta	619 Bennie Dillon Bldg., Nashville
Texas	June 12-18*	Dallas	R. T. Weber	312 Capital National Bank Bldg., Austin
	June 16-18†			
Utah	June 17-July 2	Salt Lake City	D. L. Folsom	1101 First Security Bank Bldg., Salt Lake City
Vermont	June 27-29	Burlington	P. M. Fitch	Newport
Virginia	June 6-11*	Richmond	J. M. Hughes	715 Medical Arts Bldg., Richmond
	June 6, 7†			
Washington	June 20-23	Seattle	M. L. Mower	National Bank of Commerce Bldg., Olympia
West Virginia	June 20-22*†	West Liberty	C. A. Laughlin	613 Prunty Bldg., Clarksburg
Wisconsin	June 13-17*†	Milwaukee	S. F. Donovan	Tomah
Wyoming			W. A. Hocker	210 O & S Bldg., Casper

Most states require applications to be in 30 days prior to examination date.
*Dental examination †Dental hygiene examination ‡Write to secretary of dental examining board for information on locations of examinations. §Approximate dates—verify with state dental examining board.

MEETINGS OF OTHER ORGANIZATIONS

Name	Date	Place	Secy. or Chm.	Address
American Association of Dental Examiners	Oct. 14, 15	San Francisco	C. A. Bumstead Secy.	924 Stuart Bldg., Lincoln, Neb.
American Association of Public Health Dentists	Oct. 16	San Francisco	R. D. Smiley Secy.	Indiana State Board of Health, Indianapolis
American Board of Dental Public Health	Oct. 13, 14	San Francisco	P. E. Blackerby, Jr. Secy.	250 Champion St., Battle Creek, Mich.
American College of Dentists	Oct. 16	San Francisco	O. W. Brandhorst Secy.	4221 Lindell Blvd., St. Louis
American Dental Assistants Association	Oct. 17-20	San Francisco	M. L. Martin Exec. Secy.	410 First National Bank Bldg., La Porte, Ind.
American Dental Assistants Certification Board, Inc.	Oct. 16-20	San Francisco	A. Carey Secy.	601 National Bank Bldg., Lima, Ohio
American Dental Society of Anesthesiology	Oct. 16, 17	San Francisco	J. H. Mervis Secy.	510 Walnut St., Clairton, Pa.
American Dental Society of Europe	July 11-14	Amsterdam, Netherlands	J. Moloney Hon. Secy.	110 Harley St., London, England
American Denture Society	Oct. 14, 15	San Francisco	A. L. Roberts Secy.	Aurora Main Bldg., Aurora, Ill.
American Institute of Dental Medicine	Oct. 23-27	Palm Springs, Calif.	M. G. Lewis Exec. Secy.	2240 Channing Way, Berkeley, Calif.
American Public Health Association	Nov. 14-18	Kansas City, Mo.	R. M. Atwater Exec. Secy.	1790 Broadway, New York
American Society of Oral Surgeons	Oct. 11-14	Los Angeles	R. F. Whalen Exec. Secy.	M. C. V. Post Office, Box 876, Richmond, Va.
Ark-La-Tex Dental Congress	Aug. 15	Shreveport, La.	K. V. Donaldson Gen. Chm.	1470 Albert St., Alexandria, La.
Austrian Dental Meeting	Sept. 1-4	Linz on the Danube, Austria	Prof. Hofer Secy.	Medical Association of Upper Austria, Dinghoferstrasse 4, Linz on the Danube, Austria
British Dental Association	July 4-8	Glasgow, Scotland	H. P. Buchanan Secy.	13 Hill St., Berkeley Square, London, England
Chicago Dental Society	Feb. 5-8, 1956	Chicago	K. S. Richardson Exec. Secy.	30 N. Michigan Ave., Chicago
Council on Dental Education, Dental Aptitude Tests	Oct. 7, 8		S. Peterson Secy.	222 E. Superior St., Chicago
Eighth New Orleans Dental Conference	Oct. 30-Nov. 2	New Orleans	B. G. Frick, Jr. Secy.	930 Canal St., New Orleans
Federation Dentaire Internationale	Aug. 14-20	Copenhagen, Denmark	G. H. Leatherman Secy. Gen.	35 Devonshire Place, London, England
Fourteenth Congres Francais de Stomatologie	Oct. 3-9	Paris, France	R. Vrasse Secy. Gen.	2, Rue de Miromesnil, Paris, France

Name	Date	Place	Secy. or Chm.	Address
German Association of Maxillo-Facial Surgery	July 27-30	Hamburg, Germany	F. Schön Secy.	Ludwigstrasse 30, Bad Reichenhall/Bayern. Germany
Mexican Dental Association, Third Dental Congress	Oct. 23-28	Mexico City	G. Sanchez C.	Uruapan 3. Mexico, D. F.
Mid-Continent Dental Congress	Nov. 27-30	St. Louis	J. E. Brophy Exec. Secy.	8013 Maryland Ave., St. Louis
National Board of Dental Examiners	Dec. 5, 6		G. J. Casey Secy.	222 E. Superior St., Chicago
National Dental Association	Aug. 1-5	Chicago	J. A. Jackson Secy.	P. O. Box 197, Charlottesville, Va.
New Orleans Dental Conference	Oct. 30-Nov. 2	New Orleans	W. O. Goggin Chm.	Maison Blanche Bldg., New Orleans
Northeastern Dental Society	June 5-8	Swampcott, Mass.	M. J. Frasca Secy.	153 Cabot St., Beverly, Mass.
Second Panhellenic Congress	Sept. 25-30	Athens, Greece	B. Stefanopoulos-Vrettos	71 Skoufa St., Athens, Greece
Sixth Annual Berkshire Conference	June 19-23	Lenox, Mass.	I. Glickman Dir.	Tufts College Dental School, 136 Harrison Ave., Boston
Southern Society of Orthodontists	Sept. 25-28	Charlotte, N. C.	M. D. Edwards Secy.	132 Adams Ave., Montgomery, Ala.
Southwestern Society of Orthodontists	Oct. 16-19	Wichita, Kansas	H. S. Born Secy.	908 Johnstone, Bartlesville, Okla.

INDEX TO ADVERTISEMENTS

June 1955

Abbott Laboratories A-25
American Dental Association
1955 Accepted Dental Remedies A-23
1956 Appointment Book A-30
Are You Moving? A-26
Hotel Reservation Application .. A-20, A-21
Old Journals A-26
American Ferment Co., Inc. A-28
Amurol Products Co. A-35, A-60
Ash, Sons & Co., Claudius A-43
Astra Pharmaceutical Products, Inc. ..... A-34 Insert
Austenal Laboratories, Inc. A-56, A-57

Baker & Co., Inc. A-9
Bi-Po Company A-24
Bristol-Myers Co. ..... 3rd Cover

Caulk Co., L. D. A-11, A-61
Certified McGrane Distributing Co. A-27
Church & Dwight Co., Inc. A-4
Classified Advertising A-32, A-33, A-34
Coe Laboratories, Inc. A-46
Columbia Dentoform Corp. A-26
Columbus Dental Mfg. Co. A-52
Cook-Waite Laboratories, Inc. A-2, A-3
Corega Chemical Co. A-39
Cosmos Dental Products, Inc. A-48
Crescent Dental Mfg. Co. A-18

Dental Absorbents Co. A-30
Dental Gold Institute, Inc. A-65
Dental Perfection Co. A-54
Dentists' Supply Co., of New York, The ..... 4th Cover
Dresch Laboratories, Inc. A-62

Eastman Kodak Co. A-36, A-37
Exakta Camera Co. A-24

Fleet Co., Inc., C. B. A-59

General Electric Co. A-53
Gesner, Inc., M. A. A-58
Great-West Life Assurance Co. A-19

Hanau Engineering Co., Inc. A-40
Hudson Products A-47

Invincible Metal Furniture Co. A-18

Jelenko & Co., J. F. A-1
Johnson & Johnson A-16
Justi & Son, Inc., H. D. A-30

Kling Photo Corp. A-26

Lactona, Inc. A-64
Lauer Metal Shop A-34
Lederle Laboratories A-38
Luxene, Inc. ..... A-66 Insert

Medical Protective Co. A-18
Mizzy, Inc. A-45
Myerson Tooth Corp. ..... 2nd Cover

Ney Co., The J. M. A-29
Novocol Chemical Mfg. Co., Inc. .. A-14, A-15

Pan-Pacific Dental Conference A-35
Pfingst & Co., Inc. A-5
Pfizer & Co., Inc., Chas. A-44
Physicians Casualty & Health Assn. A-60

Ransom & Randolph Co. A-42
Richmond Dental Cotton Co. A-12
Ritter Co., Inc. A-66
Rocky Mountain Metal Products Co. ... A-41
Rower Dental Mfg. Co. A-24

Saunders Co., W. B. A-10
Sharp & Dohme, Division of Merck & Co., Inc. A-49
Shelley Dental Mfg. Co. A-63
Squibb & Sons, E. R., Division of Mathieson Chemical Corp. A-22

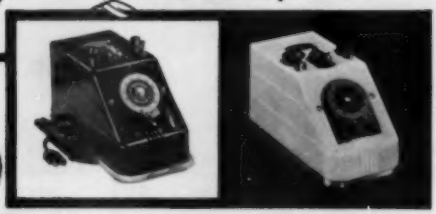
Ticonium A-31, A-55

U. S. Army Dental Corps A-13

Wernet Dental Mfg. Co., Inc. A-6, A-7
White Dental Mfg. Co., The S. S. .. A-50, A-51
Wyeth Laboratories A-8

There's NOTHING like the WIG-L-BUG® to Mix Alloy

• Uniformly! • Scientifically! • Quickly!



The "wonder electric mortar and pestle" that helps you make better amalgam fillings faster is available in two models. The beautiful WHITE Bakelite housing for only $60.50. Or the popular BLACK housing at $55.50. Requires only 7 to 10 seconds to produce smooth, fine textured mixes with your preferred alloy! Saves time. Prevents waste. It will *pay you* to use a Wig-l-bug.

Order from your Dealer or Direct

CRESCENT DENTAL MFG. CO.
1839 S. Pulaski Road, Chicago 23, Illinois

INVINCIBLE
Modernaire desks with Concealed Safe Unit

The secret's out! Invincible's new Modernaire desk with built-in concealed safe unit is the perfect place to keep valuable papers, confidential records, narcotics or dangerous drugs — safe from prying eyes and fingers. Gives you convenient safety PLUS the smart good-looks of fashion-keyed Modernaire styling.

For top drawer secrets
Choose Invincible Files with concealed safe unit in desk-high, counter-high or four drawer size. Legal or letter size, with or without general lock for drawers.

INVINCIBLE METAL FURNITURE CO.
MANITOWOC, WISCONSIN

THE MEDICAL PROTECTIVE COMPANY
FORT WAYNE, INDIANA

the doctor's most secure source of security

PROFESSIONAL PROTECTION EXCLUSIVELY SINCE 1899

Doctor... Guarantee your retirement income NOW!

As a professional man you have the personal responsibility of providing your retirement income. There is no time like the present to adopt a savings plan geared to your future needs.

Great-West Life has a Personal Pension Plan that provides a guaranteed income when you want it . . . a plan that assures you of security, independence and comfort during retirement years.

A Great-West Life representative will be glad to arrange a Personal Pension Plan that will give you protection *now*—security *later.*

Great-West Life - which underwrites the A.D.A. Group Life Insurance Plan - is experienced in preparing the life insurance programs of thousands of professional men.

If there is not a Great-West Life representative in your city and you wish further information on retirement plans please write to:

Pension Planning Dept.,
Great-West Life Assurance Company
Winnipeg, Canada.

THE
GREAT-WEST LIFE
ASSURANCE COMPANY
HEAD OFFICE - WINNIPEG, CANADA

Your future is our business to-day!

Hotel reservation application

96th Annual Session
American Dental Association
Oct. 17-20, 1955
San Francisco

INSTRUCTIONS: Reservations for hotel accommodations may be secured for San Francisco by completing this application and mailing it to: A.D.A. Housing Bureau, 61 Grove Street, San Francisco 2.

Be sure to indicate your arrival time in San Francisco. Reservations will be held only until 6 p.m. of the day you indicate when you will arrive in San Francisco unless special arrangements are made with the hotel.

Names of all persons who intend to occupy the accommodations must be listed on the application.

List four choices of hotels. Confirmation will be sent to the applicant indicating which hotel has accepted the reservation.

Write the A.D.A. Housing Bureau in San Francisco if you wish to cancel the reservation.

A.D.A. HOUSING BUREAU • 61 GROVE STREET, SAN FRANCISCO 2

(Please print or type) A.D.A.

Applicant:

Name _____

_____
(Street address) (City) (Zone) (State)

Arrival in San Francisco _____ a.m. / p.m. Leaving _____

Accommodations:

Hotel _____ (First choice) Hotel _____ (Third choice)

Hotel _____ (Second choice) Hotel _____ (Fourth choice)

☐ Single occupancy, rate to range from $_____ to $_____ per day.
☐ Double occupancy, double bed, rate to range from $_____ to $_____ per day. } 2 names must be listed below
☐ Double occupancy, twin beds, rate to range from $_____ to $_____ per day. }
☐ Suite of _____ rooms, including parlor, rate to range from $_____ to $_____ per day.

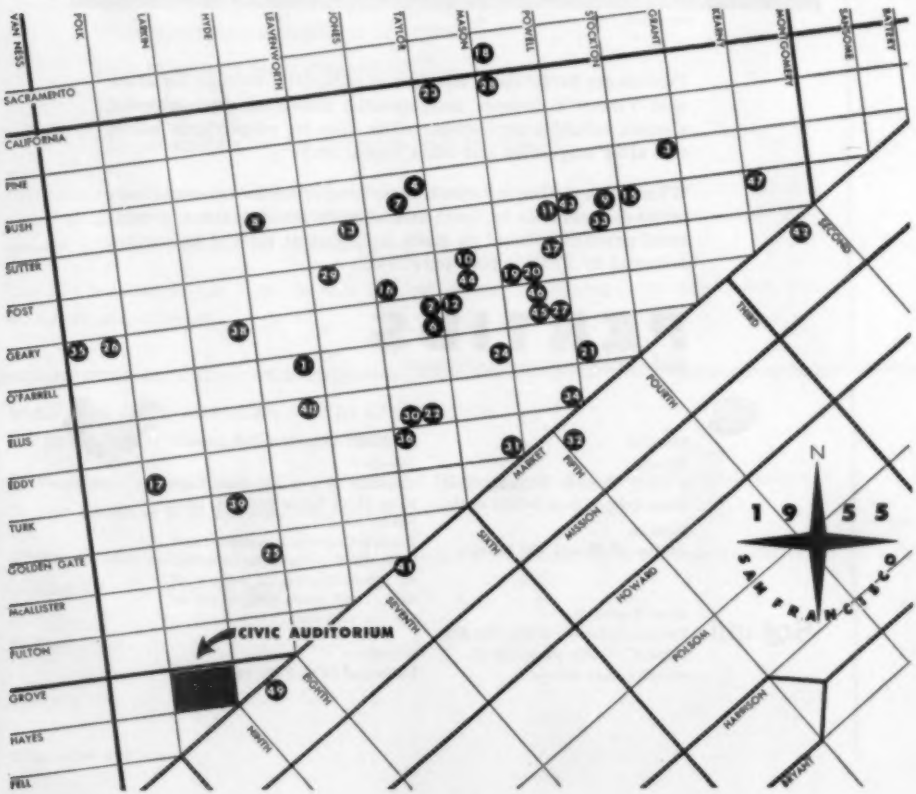
Occupants: (use an extra page for listing additional names if necessary)
Room will be occupied by:

_____
(Name) (Address) (City) (State)

_____
(Name) (Address) (City) (State)

HOTELS IN SAN FRANCISCO

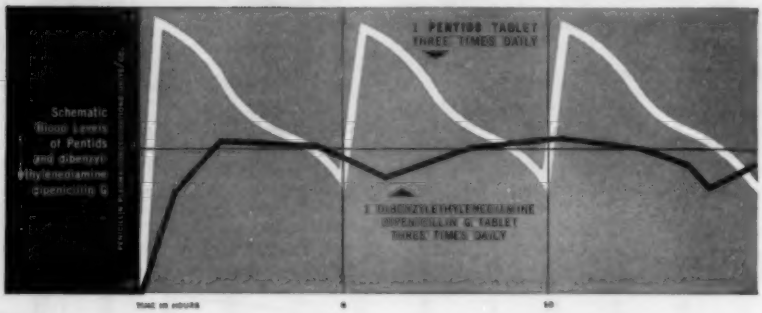
KEY NO.	HOTEL	SINGLE	DOUBLE
1	Alexander Hamilton	$6.50–10.50	$ 9.00–13.50
2	Bellevue		8.00–11.00
3	Beverly Plaza	6.00– 7.00	8.50– 9.00
4	Biltmore	5.00– 6.00	6.00– 8.00
6	Californian		8.00–10.00
7	Canterbury		6.00–10.00
8	Carlton		5.50– 6.00
9	Cartwright		6.00– 7.00
10	Cecil	4.00– 6.00	5.00– 8.00
11	Chancellor	5.50	7.50– 8.50
12	Clift	8.00–14.00	10.00–20.00
13	Commodore	4.00– 7.00	6.00–10.00
15	Drake Wiltshire	7.00– 8.00	7.50–10.00
16	El Cortez	5.00– 7.00	6.00–10.00
17	Embassy	4.00– 5.00	4.00– 7.00
18	Fairmont	10.50–16.00	13.50–19.00
19	Fielding	4.00– 7.00	5.00– 9.00
20	Franciscan	3.50– 5.00	5.00– 9.00
21	Golden State		5.00– 8.00
22	Herald		4.00– 6.00
23	Huntington	8.00–12.50	8.00–15.00
24	King George	4.00– 5.00	5.00– 8.00
25	LaSalle	5.00	6.00– 7.00
26	Lombard	$ 4.00– 6.00	$ 5.00– 9.00
27	Manx	5.50– 7.00	7.50– 9.50
28	Mark Hopkins	10.00–14.00	14.00–20.00
29	Maurice	5.00– 6.00	6.50– 8.00
30	Olympic		6.00–10.00
31	Oxford		6.00– 6.50
32	Pickwick	4.50– 5.50	6.00– 8.00
33	Plaza		7.00–10.00
34	Powell	3.50– 4.25	4.25– 6.50
35	Richelieu	4.00– 6.00	5.00– 9.00
36	Roosevelt	3.50– 5.00	4.50– 7.00
37	St. Francis	8.00–18.00	10.00–20.00
38	San Carlos		3.50– 5.00
39	Senate	4.00	5.00– 6.00
40	Senator	3.50– 3.75	4.00– 5.00
41	Shaw	4.00– 5.00	5.00– 6.50
42	Sheraton-Palace	8.00–13.00	10.00–17.00
43	Sir Francis Drake	8.50–14.50	10.50–19.50
44	Somerton	3.00– 4.00	4.00– 7.00
45	Spaulding	4.00	5.00– 6.00
46	Stewart	4.50– 7.00	6.00–12.00
47	Sutter	4.00– 5.50	6.00– 9.00
49	Whitcomb	5.00– 9.00	7.00–12.00



just **1** or **2** Pentids Tablets three times daily

as adjunctive therapy

for the more common dental infections



Pentids are particularly effective as adjunctive therapy for acute oral Vincent's disease, pericoronitis, alveolitis, dento-alveolar abscess, cellulitis, and osteomyelitis. Also for prophylaxis before and after extraction and other dental surgery.

When pre-existing cardiac lesions predispose to sub-acute bacterial endocarditis or there is extensive tissue trauma, parenteral penicillin should be given before or at time of extraction followed by Pentids postoperatively.

PENTIDS

(Squibb 200,000 Units Penicillin G Potassium)

TABLETS

Dosage:
1 or 2 Pentids Tablets three times daily ½ hour before meals.

Supply:
Bottles of 12 and 100 tablets.

Also Available:
Pentids-Soluble Tablets, 200,000 units of soluble penicillin G.

SQUIBB

"PENTIDS"® IS A SQUIBB TRADEMARK

CAPSULES—NEW! FOR CHILDREN

Dosage:
Contents of 1 or 2 Pentids Capsules three times daily ½ hour before meals.
Pentids Capsules are opened and their soluble penicillin is added to approximately 2 ounces of milk, fruit juice, ginger ale or similar vehicles.

Supply:
Bottles of 24 and 100 capsules.

AVAILABLE NOW . . .

The 20th edition

of

ACCEPTED DENTAL REMEDIES

The annual handbook of rational therapeutics that should be in the library of every practicing dentist. Every phase of therapeutics is covered authoritatively, yet clearly and briefly.

DO YOU KNOW —

Which antibiotic to use? and when?

How to find reports on unaccepted products?

How to disinfect instruments?

What commercial products are accepted?

How to write a drug prescription?

The place of nutrition in dentistry?

The provisions for the acceptance of products?

The answers to these and many other equally important questions can be found quickly and easily in ACCEPTED DENTAL REMEDIES. Dentists who use this valuable reference work consider it an indispensable aid to modern practice.

The cost is nominal—just $2.00. Be sure you get a copy by placing your order today. Use the handy coupon below.

Order Department, AMERICAN DENTAL ASSOCIATION
222 East Superior Street, Chicago 11, Illinois

☐ Please enter my order for ..... copies of (Catalogue No. P-1) Accepted Dental Remedies, 1955 edition at $2.00 per copy. My remittance of $..... is enclosed.

☐ Please notify me by mail each year when Accepted Dental Remedies is available. I understand there is no charge for this service.

please type or print

Name .....

Address .....

City, zone & state.....

A *NEW* LIFE-LINE
In RESTORATIVE DENTISTRY

Pulpdent® LIQUID*
ROWER

(Brand of CALCIUM HYDROXIDE SUSPENSION)

Used as a cavity liner, PULPDENT (Rower) LIQUID neutralizes cement acids and minimizes thermal shock. In cases of pulpal exposure, it also aids in forming secondary dentin.

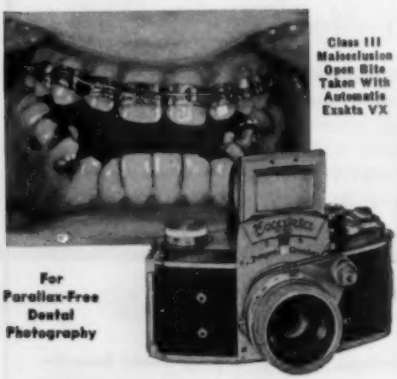
Dispensed in 15cc polyethylene squeeze bottles; available at leading dental supply houses.

Accepted Council on Dental Therapeutics American Dental Association

ROWER DENTAL MFG. CORP. Boston 16, Mass. U.S.A.

Group A Classification announced J.A.D.A. 50:334 (Mar.) 1955

*Also available at dental supply houses; PULPDENT (Rower) PASTE (Brand of Calcium Hydroxide Paste), especially suitable in vital pulpotomy and in pulp capping.



Class III Malocclusion Open Bite Taken With Automatic Exakta VX

For Parallax-Free Dental Photography

AUTOMATIC EXAKTA VX

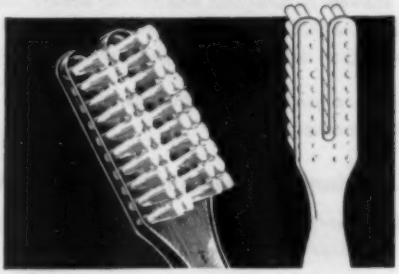
35-mm. Single Lens Reflex Camera with f/2.0 Automatic Westagon Lens

For easily made dental photographs and faithfully reproduced oral conditions—facilitating case recording in oral pathology, surgery, orthodontics and full mouth rehabilitation . . . an invaluable aid in patient education. New AUTOMATIC Lens, when fully stopped down, permits focusing and viewing without annoying the patient with modeling lights. In addition, you can use the Exakta for personal photography, sports, portraits, copywork, etc.

FREE—Write Dept. 200 for Free Descriptive Booklet "B" on Camera & Accessories and Brochure on Close-Up Technique with Automatic Exakta VX.

EXAKTA CAMERA COMPANY
705 Bronx River Rd., Bronxville 8, N. Y.
Copyright 1955, Exakta Camera Company

The 2-row multi-tuft



Unique open center design gives access to hard-to-reach spots. A prescription for irregular teeth, bridges, children's braces, receding gums. Hygienic . . . quick drying. Send your druggist's name and address, and we will see that he is supplied. Free sample on request. Nylon or natural.

BI-PO
DUAL ACTION

BI-PO Company, Box 737, Palo Alto, Calif.

pediatric preoperative sedation

one of the
44 uses for
short-acting

NEMBUTAL®

"A barbiturate which seems to have a most consistent effect in my experience is NEMBUTAL (*Pentobarbital, Abbott*) . . . administered one hour before operation and morphine sulphate twenty minutes before the patient goes into the operating room.

"If this preoperative medication is followed, the child will not be apprehensive and will often require less than the usual amount of anesthetic . . . one is impressed with the quiet sleep they produce and more impressed with the quiet uneventful recovery and infrequent nausea and vomiting." Abbott

Schaerrer, W. C., J. Missouri M. A., 37:287.

607102

"YORICK"
Skull is 3½" x 2¼"

Price
$15.00

With This Miniature Ivorine Skull You Can SHOW Patients What You're Talking About

Invaluable in Educating Patients to Accept Your Concepts of Advanced Dental Service. Suggestions on Its Use Accompany Skull.

If you do not have our Catalog No. 33, write for your copy today.

COLUMBIA DENTOFORM CORPORATION

"The House of A Thousand Models."

131 East 23rd Street New York 10, N. Y.

Could you use a few extra dollars?

Then sell us your old issues of The Journal of the American Dental Association. Copies of the following issues are wanted:

NOVEMBER 1914
MARCH 1920

We will pay $1.50 for each copy we buy. *Write us* today telling us if you are willing to sell.

Purchasing Dept.

AMERICAN DENTAL ASSOCIATION
222 E. Superior St., Chicago 11, Illinois

for your WORK, for your PLEASURE
you need the world's tiniest precision camera
—the fabulous minox

so tiny (1⅛" x 3¼" x ¾"), you always carry it.
so light (2½ oz.), less than your keys.

perfect candid pictures in black and white... and color. fast f/3.5 lens focuses as close as 8" and up to inf. all speeds from ½ sec. up to 1/1000 sec. *NO FLASH NECESSARY FOR INSIDE SHOTS. USE IN OPERATING ROOM and for CASE HISTORIES.* yields excellent large size prints.

minox III-S with chain and leather case..... $139.50

for literature and your dealer's name, write Dept. E

KLING PHOTO CORP., 235 FOURTH AVENUE, NEW YORK 3, NEW YORK

are you

?

Giving us advance notice will keep the Journal coming to you without interruption. *Here's a handy form to use:*

Name .....

Old Address .....

New Address .....

Mail to American Dental Association, 222 E. Superior St., Chicago 11, Ill.

LOOK FOR THE McGRANE STAR TRADEMARK

Over 10,000 dentists in processing millions of cases in the past twelve years have used the services of CERTIFIED McGRANE PROCESSORS, the dental technicians properly trained in the laboratory phase of McGRANE Full Denture Procedure.

California	North Hollywood, Lester Brothers Dental Laboratory Inglewood, V & P Dental Laboratory Long Beach, Eric Nord Dental Laboratory Los Angeles, South Los Angeles Dental Laboratory Los Angeles, Silverplate Dental Laboratory Oxnard, Joseph Cloughen, Dental Technician Puente, Lloyd L. Landis Dental Technician Redwood City, Redwood Dental Laboratory Sacramento, General Dental Laboratory Salinas, Salinas Dental Laboratory San Jose, San Jose Dental Laboratory San Bernardino, Duncombe Dental Laboratory Studio City, Frank Daly Dental Laboratory
Connecticut	New Haven, Centric Dental Laboratory New Haven, Master-Craft Dental Laboratory
Florida	Jacksonville, Becht Dental Laboratory Jacksonville, Tomlinson Dental Laboratory Orlando, Jewel-Dent Laboratory St. Petersburg, Green Dental Laboratory St. Petersburg, St. Petersburg Dental Laboratory
Georgia	Atlanta, Paul M. Davis Dental Laboratory
Illinois	Chicago, J. Thompson Dental Laboratory Chicago, Jackman Dental Laboratory Kankakee, Gibson Dental Laboratory Springfield, Milton Dental Laboratories, Inc.
Indiana	Indianapolis, Ace Dental Laboratory Terre Haute, John's Dental Laboratory
Iowa	Fort Dodge, Mills Dental Prosthetic Studio
Kansas	Wichita, Sandhoff's Dental Laboratory
Louisiana	New Orleans, Paramount Laboratories, Inc.
Massachusetts	Boston, General Dental Laboratories
Michigan	Holland, Victor Von Fleet Prosthetic Laboratory Service Detroit, River Rouge, Commercial Dental Laboratory
Mississippi	Clarksdale, Clarksdale Dental Laboratory
Montana	Butte, Butte Dental Arts Laboratories
Nebraska	Grand Island, Forrest Jaeger Dental Laboratory
New Jersey	Hoboken, The D. P. Laboratories
New York	Buffalo, National Dental Company Laboratories New York City, John Marco Dental Laboratory New York City, Jack Streib Dental Laboratory
Ohio	Chillicothe, James Hatcher, Central Dental Laboratory Cleveland, Miles Dental Laboratory Cleveland, Mutual Dental Laboratory
Oklahoma	Ada, Tennis Dental Laboratory
Oregon	Medford, Wards Dental Laboratory
Pennsylvania	York, Lindemuth Dental Laboratory, Inc.
Texas	Corpus Christi, W. B. Hines Dental Laboratory Houston, B. B. Moore Laboratories Houston, American Dental Laboratory
Washington	Spokane, Jerry Rowe Dental Laboratory
Wisconsin	Rice Lake, Rice Lake Dental Laboratory
Wyoming	Casper, Don Loucks Dental Laboratory
Washington, D.C.	Washington Dental Company (Laboratories)
Puerto Rico	Hato Rey, Oral Art Laboratories, Inc.

A PICTURE OF PERFECTION

ACHIEVED WITH McGRANE FULL DENTURE PROCEDURE*

*** PREDETERMINED perfection because it's based on FIVE FOOLPROOF FUNDAMENTALS of science and mathematics.**

THE facts prove that . . .
McGRANE FULL DENTURE PROCEDURE

- Steps up chair-time productivity
- Reduces make-over expense
- Sharpens dental proficiency
- Pulls in new business
- Nets more satisfied patients
- Increases, annual incomes

because . . . IT'S RIGHT THE FIRST TIME

CERTIFIED McGRANE PROCESSOR

Certified McGrane Distributing Co.
Los Angeles • California

Astring-o-sol mouthwash

concentrated for economy and convenience

a little goes a long way

- Here is a peppy, invigorating mouth rinse that not only tastes good and sweetens the breath, but also helps loosen and flush away organic debris.
- Astring-o-sol is an efficient detergent and effective deodorant. It will not injure delicate oral tissues and is ideal for daily mouth care.
- It's economical . . . it takes only a few drops of concentrated Astring-o-sol in a half-glass of water for a pleasing and effective mouthwash.
- USE IT AT THE CHAIR BEFORE AND AFTER DENTAL PROCEDURES
- RECOMMEND IT TO YOUR PATIENTS FOR DAILY MOUTH CARE

Remember... it takes only drops instead of drams because it's concentrated.

American Ferment Co., Inc.
1450 Broadway, New York 18, N. Y.

We are doing a better job nowadays on conservation.
Dental-wise, Ney-Oro A-1 inlays preserve the tooth with their burnished margins, allow "wearing-in" by opposing teeth, yet are incomparably stronger than amalgam
and never chip away at the edges.
Ney-Oro A-1 is the softest of a series of three matching gold alloys — matched in color, quality and melting range,
but varying in hardness.

Ney-Oro A-1 - BHN 85 for bulky inlays
Ney-Oro B-2 - BHN 120 for thin MOD's, ¾ crowns, bridgework
Ney-Oro C-3 - BHN 225 for thinnest bridges, all partials

THE J. M. NEY COMPANY Gold SINCE 1812
HARTFORD CONN.

NOW IS THE TIME

to order your

ADA Appointment Book for 1956

avoid delay or disappointment

Take full advantage of the patient recall feature

$2.00 per copy

Order Department, AMERICAN DENTAL ASSOCIATION
222 East Superior Street, Chicago 11, Illinois

Please enter my order for_____copies of (Catalogue No. M-2) A.D.A. Appointment Book for 1956 at $2.00 per copy. My remittance of $_____ is enclosed.

name _____

address _____

city, zone, state _____

please type or print

"Super Absorbent" COTTON ROLLS

These improved cotton rolls are a delight to the efficient dentist and are not harsh to the patient's mouth. They are actually spun from 100% pure surgical absorbent cotton to make them softer, more pliant and noncollapsible. They adapt easily into any position, are stretchable and small tufts are quickly detachable.

DENTAL ABSORBENTS CO.
619 East Montecito St.
Santa Barbara, Calif.

FREE SAMPLE Use Coupon

Gentlemen:
Please send me a free, generous sample of DENTAL ABSORBENTS.

DR._____

STREET_____

CITY and STATE_____

FREE TECHNICAL LITERATURE

Check the plastic products in which you are interested. Attach your professional card, and mail. We will send you the latest technical information on:

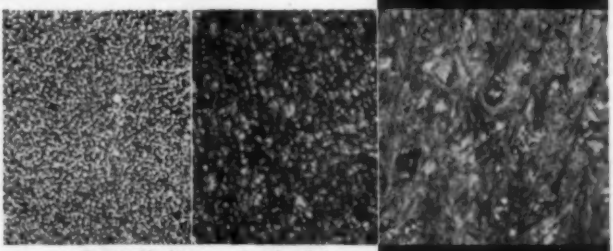
JUSTI

Products for Better Dentistry

- ☐ S.R. acrylic denture teeth.
- ☐ S.R. characterized anteriors.
- ☐ Four types of posteriors *including short-bites.*
- ☐ Justi acrylic facings.
- ☐ Justi-tone denture base material.
- ☐ S.R. denture base material.
- ☐ Justi Liqua-Color.
- ☐ C.B.F.—crown and bridge material. *cross-linked*
- ☐ Gol-Shank tungsten carbide burs *28 sizes—A.H.P. and S.H.P.*
- ☐ Justi anti-bacterial acrylic cement.
- ☐ Justi anti-bacterial reline material.
- ☐ Justi Muco-Seal.

S.R. **H. D. JUSTI & SON, INC.**
5145 Spring Garden St. • Phila. 4, Pa.

Tilon IS A GEL



Powder-Liquid Regular Gel

TILON — uniform, properly aged. Pre-mixed in a research laboratory. No contamination!

HERE'S WHY...

Compare these unretouched photographs! See how the powder-liquid mix (at left) contains irregular, undissolved pearls suspended in a semi-liquid. The middle photo is an ordinary ready-mixed gel. Tilon, at right, is quality-controlled, has inlaid color, and is stronger because it is blended in a research laboratory.

TICONIUM
413 No. Pearl St., Albany 1, N.Y.

The NEW,
Unidirectional Denture
Tilon

CLASSIFIED ADVERTISING

Forms close on 25th of second month preceding month of issue

Remittance Must Accompany Classified Ads.

Classified advertising rates are as follows:
30 words or less—per insertion.....$4.00
Additional words, each.....10
Answers sent c/o American Dental Association.....no extra charge
Replies to A.D.A. box number ads should be addressed to—
American Dental Association
222 E. Superior Street
Chicago, Ill.

PRACTICES AND OFFICES FOR SALE AND RENT

CALIFORNIA—Practice for sale, beautifully equipped two-chair, air-conditioned office in Sacramento. Excellent location in prosperous community, near hospital and schools. Latest equipment. Established practice. Will sacrifice. Address P. O. Box 268, Fair Oaks, Calif.

●

CALIFORNIA—For sale. Spacious bungalow office and ranch home, coast town, state's most desirable section. Large net, general practice, low overhead. Only dentist. Reasonable price, excellent opportunity. Address A.D.A. Box No. 955.

●

CONNECTICUT — Exceptional opportunity. Good practice for sale in an outstanding location. Seacoast town. Must sacrifice as leaving to specialize. Address A.D.A. Box No. 920.

●

FLORIDA—Well established, modern, fully equipped, air-conditioned, bungalow office. Near Daytona Beach. Excellent opportunity for right person. Address A.D.A. Box No. 934.

●

GEORGIA—For sale or lease. Attractive, modern office, air-conditioned. Established practice. Annual gross averages $25,000 to $30,000. Town of 3,000 population. I am moving to city. Excellent location for man who prefers small town. Dr. Edgar W. Barksdale, 102 Cabot St., Montezuma, Ga.

●

ILLINOIS—For sale, practice in central Illinois town of 45,000. Established 37 years. Will introduce. New S. S. White unit and motor chair. G. E. x-ray. Retiring account of health. Address A.D.A. Box No. 962.

●

INDIANA—For rent, two-chair office, efficient and attractive. Air-conditioner left or removed at option of renter. Must be seen to be appreciated. City of 18,000 population. $55 per month. Address A.D.A. Box No. 937.

●

MICHIGAN—Northwest Detroit. Building and practice for sale. Owner wishes to leave state. Building has two-chair dental suite, plus four-room suite as rental. Address A.D.A. Box No. 804.

●

MICHIGAN—For sale. Busy, well-established general practice, southwestern Michigan. Modern two-chair office. Grossing $20,000. Owner specializing. Address A.D.A. Box No. 966.

●

MICHIGAN—Southwest. Two-chair office for rent in new five-chair group practice, or can associate on a commission basis. Address A.D.A. Box No. 965.

MINNESOTA—For sale, fully equipped dental office. VA fees, booked solid for two months. Stable farming area, good hunting and fishing. Moving to California. $2,000. James Dobrin, D.D.S., Swanville, Minn.

●

MONTANA—Missoula, finest city in state, select location, newly equipped and remodeled office, 1,200 sq. ft. Low overhead, busy practice, but must leave state. For details on this real opportunity write A.D.A. Box No. 922.

●

NEBRASKA—For rent. Long established two-chair office space. Reception room in common with practicing M.D. Excellent opportunity to develop practice in town of 4,000. Write Robert Miller, Crete, Neb.

●

NEW JERSEY—For sale, two-chair, fully equipped office on downtown corner of industrial city in metropolitan area. Established over 35 years. Retiring on account of illness. Cost reasonable, will arrange suitable terms. Address A.D.A. Box No. 958.

●

NEW JERSEY—For rent, office, living quarters, garage. Choice location on doctors' row, reasonable rent, heat furnished. Presently occupied by optometrist. Write or call Dr. A. F. Senaldi, 106 Lexington Ave., Passaic, N. J. Phone Prescott 8-7037.

●

NEW JERSEY—For sale, beautifully equipped dental office and seven-room lovely split-level brick ranch house combined, in fast growing attractive suburban community of N. Y. City, in Bergen county, N. J. Address A.D.A. Box No. 939.

●

NEW YORK—Jamestown. For rent, dental office, established ten years. Prosperous community. Office fronts busy downtown street. Modern, fireproof building, 700 sq. ft. or will divide. All plumbing and wiring in. Reasonable rent. Wonderful opportunity. Address Gus Bavar, 31 Chestnut St., Jamestown, N. Y.

●

NEW YORK—For rent, sale or association, fully equipped dental office, located in Buffalo suburb. Excellent opportunity. Growing practice, unlimited potential, depending on person. Leaving to specialize. Address A.D.A. Box No. 967.

●

NEW YORK—Modern dental office for rent. Established 40 years. Excellent location. Large waiting room, office, laboratory and wash room. Wired for x-ray. Moderate rent. Write or telephone William Yalowich, 660 Hudson Ave., Rochester, N. Y. Telephone Ha. 4380.

●

NEW YORK—For sale, busy practice in upstate town of 9,000, beautiful, completely remodeled country home with eight spacious rooms and two baths. Excellent hunting and fishing. Situated just off throughway, 4-hour drive from N.Y.C. Both for $28,000. Excellent value. Address A.D.A. Box No. 961.

NEW YORK—Upstate, equipped five-room suite, ultramodern, excellent clientele. Will consider terms. Write A. H. Boss, 2215 Nott St., Schenectady, N. Y. Phone 4-4013.

●

NEW YORK—Dental office for sale, fully equipped, in growing section Buffalo. $20,000 annual. Leaving state. Address A.D.A. Box No. 969.

●

NORTH CAROLINA—For sale, completely air-conditioned, three operating rooms, large laboratory, fully equipped. Dark room, ladies' powder room, secretary and consultation room. Builder's plan furnished by Ritter architect before this most modern office building in town was above ground in 1940. Educational and hospital center of the south. Home of Duke University and near University of North Carolina. Plan to retire after 50 years of continuous practice in this town of 80,000. Address P.O. Box 507, Durham, N. C.

●

OHIO—For sale, building with attractive, well-equipped, three-chair, first floor office in progressive town of 25,000. Building has additional income. Leaving to specialize. Address A.D.A. Box No. 957.

●

OKLAHOMA—For sale, well-established orthodontics practice. Most attractive area in state for oil development, exceptionally good agriculturally. Draws patients from the entire southwest part of state. Write E. B. Strickler, D.D.S., Petroleum Bldg, Chickasha, Okla.

●

PENNSYLVANIA—For sale or rent. Well equipped, two-chair dental office and practice in established location, southeast Pa. Progressive town of 12,500 with own hospital and large drawing area. Owner leaving to specialize. Reasonable. Address A.D.A. Box No. 945.

●

PENNSYLVANIA—For sale. Dental office, fully equipped, combined with modern home, central, near Harrisburg. Former dentist deceased. Replacement urgently needed. Terms. Or will rent offices (4 rooms). Reasonable. Ready to begin practice. Mrs. Fay Mullen, 200 W. Main St., Mechanicsburg, Pa.

●

PENNSYLVANIA—Dental office for sale. Going into orthodontics. Two-chair office, Ritter fully equipped. Small college town in eastern Pa., between Allentown and Reading. Apartment accompanies office. Address A.D.A. Box No. 949.

●

PENNSYLVANIA—For sale. Philadelphia office practice, all equipment and lease (monthly rental $125), 3919 Spruce St. Good location. Reasonable. Eduardo Herrera, Admr. of Estate of Dr. George G. Alvarez, 3601 Chestnut St., Philadelphia 4, Pa.

●

WEST VIRGINIA—For sale, for market value of equipment, long established practice. Good location in downtown Huntington. Address A.D.A. Box No. 948.

LOCATIONS AVAILABLE

FLORIDA—Opportunity: Space available for Florida licensed dentist. Modern office building occupied by busy general practitioner (M.D.). Ample off-street parking. Established location. Prosperous community. Busy practice assured from start. For details call collect or write Allen Shepard, M.D., 638 United St., Key West, Fla.

●

NEW YORK—Opportunity oral surgeon in well-located medical building. Unopposed. Offices to specifications. Reasonable rental. Occupancy September 1955. Dr. David Lang, 101 Hillside Ave., Williston Park, L.I., N. Y. Phone Pioneer 2-3644.

NEW YORK—For rent, office space formerly occupied by dentist. Private or common reception room with general practitioner. Good location. Write H. J. Sliski, M.D., 1040 W. Genesee St., Syracuse, N. Y. or phone 3-7755.

●

TEXAS—For sale. Air-conditioned medical and dental building with three suites of offices. Located in rapidly developing city area now occupied by two dentists and M.D. Near open staff hospital. Robert S. Alcorn, M.D., 1406 N. Depot, Victoria, Texas.

●

TEXAS—Space available for orthodontist and pedodontist in pediatric center, southeast Texas. City is highly industrialized with 80,000 population. Excellent opportunity since there is need for well-trained specialists. Address A.D.A. Box No. 842.

OPPORTUNITIES AVAILABLE

Dentists

CALIFORNIA—Wanted dentist, California licensed. Community of 14,000 interior California. Air-conditioned office available in new professional building. Practice assured. Financial help available to start. Area needs dentist. Should net $12,000 to $20,000 first year. Friendly town, superb schools, good year-round climate. Wealthy area with diversified interests including agriculture and oil. Address A.D.A. Box No. 884.

●

CONNECTICUT—Associate wanted for active general practice. Unusual opportunity with partnership plan. Thriving community on Long Island Sound. Address A.D.A. Box No. 943.

●

DISTRICT OF COLUMBIA—Opportunity for a good operator to be associated with another dentist in the highest type of practice on a percentage basis with eventual ownership. Planning to retire in four or five years after new man is firmly established. Should gross $24,000 first year and up to $50,000 when good enough. Must be draft exempt. Address A.D.A. Box No. 936.

●

IOWA—Dentist wanted in Sabula, eastern Iowa, population 900. No other dentist in town. Apartment and office space available at modest cost. Contact Secretary, Associated Businessmen of Sabula, Sabula, Iowa.

●

KANSAS—Wanted associate, with object of purchase, established practice in Wichita. Grossed over $37,000 last year. Modern, air-conditioned office. Address A.D.A. Box No. 956.

●

OKLAHOMA—Young dentist to share office. Percentage or partnership can be arranged. Modern office, 10 rooms, in the heart of large medical-dental center in large city in Oklahoma. Prefer service-exempt person. Address A.D.A. Box No. 954.

Hygienists

INDIANA—Wanted hygienist, northern Indiana. Salary $125 to $160 per week. Address A.D.A. Box No. 902.

●

INDIANA—Dental hygienist wanted by 31 year old dentist in general practice. Two-chair office with facilities available for third operating room. Address A.D.A. Box No. 960.

Technicians

MASSACHUSETTS—Ideal opportunity for dental laboratory technician, particularly for metal castings technician. Write Dr. F. C. Ortolani, 24 North St., Plymouth, Mass.

●

PUERTO RICO—Wanted laboratory technician capable of making inlays, bridges and dentures. Write Brethren Service Project, Castaner, Puerto Rico.

OPPORTUNITIES WANTED

Dentists

1951 graduate requires association or partnership with dentist in Colorado. Veteran, draft-exempt. Four years' experience in private practice. Address A.D.A. Box No. 898.

●

Dentist, completing service tour in July, wishes to purchase active general practice; or rent/buy office space to establish new practice. Northern suburbs of New York City (75 mile radius). Address A.D.A. Box No. 953.

●

Dentist, age 27, married, New York licensed, just completed service tour, wishes to purchase active practice or would consider desirable association in New York state. Address A.D.A. Box No. 952.

●

Pennsylvania licensed dentist, age 28, desires association, location or purchase of practice in southeastern Pennsylvania. Released from Navy November 1955. Four years' excellent experience in oral surgery and general dentistry, including accredited internship. Address A.D.A. Box No. 950.

●

Dentist, returning from military service, has 16 years of private practice. Desires to buy active general practice in New York state or Connecticut. Also looking for good location. Address A.D.A. Box No. 947.

●

Wisconsin licensed dentist with family, desires to purchase an active general practice in medium size town. Service obligation completed and would consider an association leading to purchase. Address A.D.A. Box No. 946.

●

Pennsylvania licensed, 1949, age 33, resigning from Navy July 1955, desires location or association in general dentistry. One year internship, year graduate work in bacteriology. Excellent experience in prosthetics and exodontics. Prefer Harrisburg or Erie location. Address A.D.A. Box No. 942.

California licensed recently. Transferred from New York because of wife's health. Twenty years' top rehabilitation experience, attachment and porcelain work. Postgraduate clinician and teacher, hydrocolloid technic and full dentures. Personable, congenial, fast operator and expert in analgesia. Knowledge Johnson Twin Arch orthodontics in relation to adult reconstruction. Excellent health, weight 200 lbs., height 6-2. Please send all details in first letter. Address A.D.A. Box No. 944.

●

Missouri dentist, 39, two years' full time postgraduate prosthetic training completed, veteran, desires association with older dentist or group practice. Missouri and Kansas license. Address A.D.A. Box No. 935.

●

General practitioner, licensed New York and Connecticut, completing Air Force tour July 1955, desires location or association in suburban location, New York or Connecticut. Address A.D.A. Box No. 938.

●

Oral surgeon, 30, veteran, married, desires association with group or individual. Good training and clinical experience both minor and major surgery, anesthesia. Will take Boards. Address A.D.A. Box No. 941.

●

D.M.D., Harvard, Florida license, 15 years' general practice, desires location with physician, orthodontist or oculist in West Palm Beach area. Address A.D.A. Box No. 963.

●

Wanted to purchase, active practice, good income, within 75 miles N. Y. C. Dentist five years' experience, age 30, returning from service, available immediately. Price secondary consideration for right practice. Send all particulars. Address A.D.A. Box No. 964.

WANTED TO BUY

Old or used dental books, journals, prints. Leo L. Bruder, 1 DeKalb Ave., Dept. 21, Brooklyn, N. Y. Dealer in out-of-print dental literature.

●

Wanted, used Airdent machine, recent Ritter or White unit and motor chair and other equipment to complete office in Buffalo, N. Y. area. Address A.D.A. Box No. 959.

FOR SALE

Heidbrink Simplex gas machine, new rubber, restraining strap, excellent condition. Priced right. Write D. E. Michael, D.D.S., 19 Harding Ave., Jackson, Ohio.

SOLID BRONZE NAME SIGNS

Cast, raised letters, drilled, with screws

3" x 12" — $12.60	3" x 14" — $14.70	3" x 16" — $16.80
4" x 14" — $19.60	4" x 16" — $22.40	4" x 18" — $25.20
5" x 16" — $28.00	5" x 18" — $31.50	5" x 20" — $35.00
6" x 18" — $37.80	6" x 20" — $42.00	6" x 25" — $52.50

Other sizes 35c per sq. in. Minimum, $7.00. Signs with wording on both sides 60c per sq. in.
COLLECT PLEASE SEND CHECK WITH ORDER

LAUER METAL SHOP • 1516 E. Baltimore Street • Baltimore 31, Md.

When performance counts...

Council Acceptance is your assurance of high professional standards.

Professional samples and descriptive literature available on request

ASTRA PHARMACEUTICAL PRODUCTS, INC.
79 Neponset Street Worcester, Mass., U.S.A.

tops as a topical..

WIDE MOUTH JAR
For office use in
all phases of
operative dentistry

Council Acceptance is your assurance of high professional standards.

PROFESSIONAL DISPENSETS
For dentist-directed home use
- *Especially under new dentures*

Professional samples and descriptive literature available on request

ASTRA PHARMACEUTICAL PRODUCTS, INC.
71 Neponset Street Worcester, Mass., U.S.A.

HAWAII

OFFICIAL PROGRAM
HONOLULU COUNTY DENTAL SOCIETY

PAN-PACIFIC DENTAL CONFERENCE

OCTOBER 24-25, 1955

IMMEDIATELY FOLLOWING THE A.D.A. ANNUAL SESSION IN SAN FRANCISCO

This is the only program officially connected with the Pan-Pacific Dental Conference; it is the Honolulu County Dental Society's official tour for visiting dentists. The scientific sessions and the President's No-Host Reception are open to all A.D.A. members. However, dentists wishing to enjoy the other parties, sightseeing trips, native entertainment, shows, dinners, inter-Island tours, and special events organized by the Islanders for visiting dentists can do so only by joining this official tour of the Honolulu County Dental Society.

10 DAYS 10 NIGHTS $385 PLUS $30 TAX

TOUR PRICE INCLUDES: Roundtrip transportation via either Pan American or United Air Lines, residence at Waikiki Beach, and all the sightseeing, social activities, and special events arranged by the Honolulu County Dental Society for visiting dentists.

RESIDENCE: Individual members designate their choice of hotels: Royal Hawaiian, Surf Rider, Princess Kaiulani, Moana, Reef, Edgewater, Halekulani, or Waikiki Biltmore hotels.

TRANSPORTATION AND DATES: Departure: Friday or Saturday, October 20 or 21. Return: Sunday or Monday, October 30 or 31. Individual members may designate other dates, including choice of Lurline travel.

Consult Your Travel Agent or Write to:

PAN-PACIFIC DENTAL CONFERENCE
PROFESSIONAL BUILDING
3124 EAST 14th STREET
OAKLAND 1, CALIFORNIA

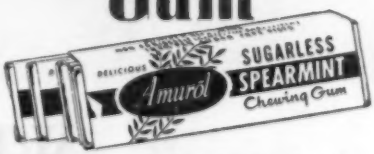
---

for caries-active patients *prescribe*

Amurōl

NON-CARIOGENIC

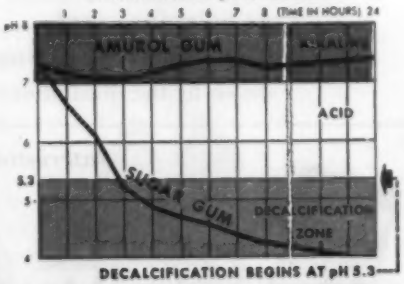
Sugarless Gum



Sold through drug, department and health food stores. Samples and literature on request. Please give druggist's name, address.

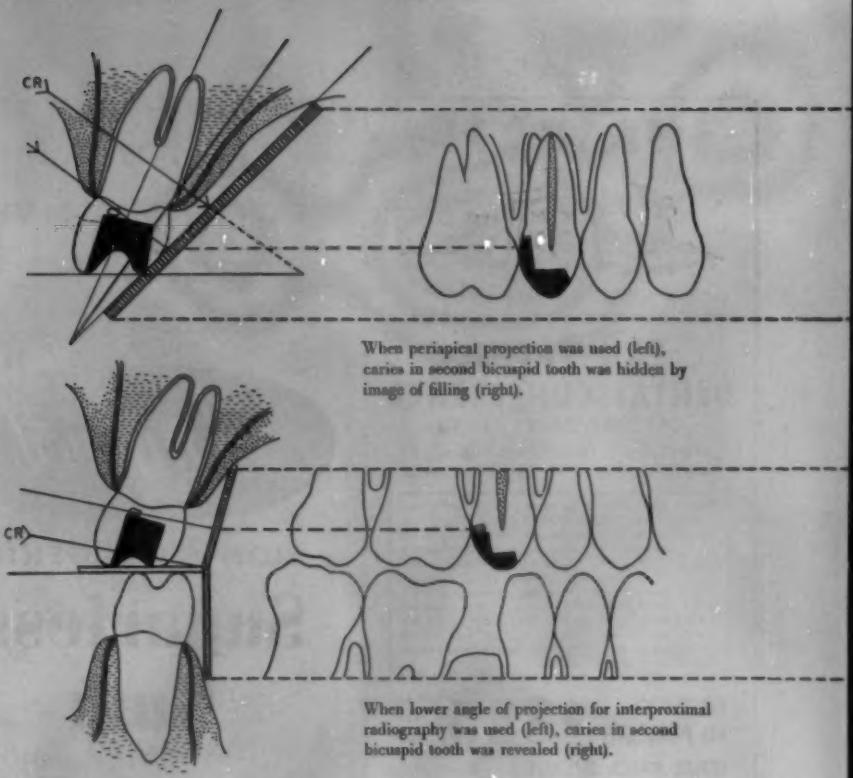
AMUROL PRODUCTS COMPANY
116 S. MICHIGAN AVE., CHICAGO 3, ILL.

Comparative Effects of Sugar Gum and Amurol Gum on pH of Saliva



DECALCIFICATION BEGINS AT pH 5.3

As shown above, pH of caries-active saliva remains in alkaline zone for hours with AMUROL SUGARLESS GUM, whereas with sugar gum the pH drops to the acid level under the same conditions.



When periapical projection was used (left), caries in second bicuspid tooth was hidden by image of filling (right).

When lower angle of projection for interproximal radiography was used (left), caries in second bicuspid tooth was revealed (right).

Why Periapical...

What is the *extent* of the carious condition?

The supplemental Bite-Wing examination is almost indispensable if carious areas concealed on the interproximal surfaces are to be discovered.

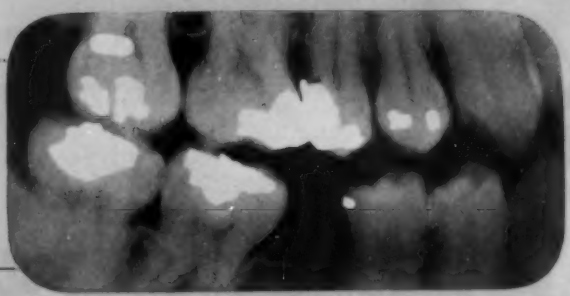
An example of the important part that geometry plays is shown by the illustrations above.

Interesting—to your patients!

FREE . . . First 50 copies of "How to Prevent Toothache," by Howard R. Raper, D.D.S. Additional copies, $1 per 100.

"PICTURE YOUR TEETH" . . . Sound and color motion picture tells lay audiences about radiodontics. Approved by American Dental Association. Write and find out how to get it.

EASTMAN KODAK COMPANY,

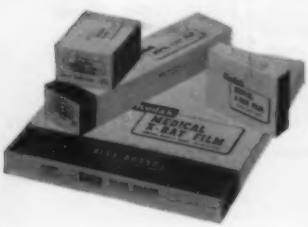


often calls for Bite-Wing

Though technics may be correct, the quality of the dental x-ray materials is the final answer.

That is why dependable film and chemicals are so important; why it pays to insist upon Kodak dental film and chemicals—reliable, uniform—and *made to work together.*

For complete dependability . . .



Use Kodak Dental X-ray Film . . .

Process in Kodak Dental X-ray Chemicals

Order Kodak x-ray materials from your dental dealer.

X-ray Division, **Rochester 4, N.Y.**

Kodak
TRADE-MARK

AUREOMYCIN CAPSULES

MORE EFFECTIVE

AUREOMYCIN*

Chlortetracycline

AN AID TO, NOT A SUBSTITUTE FOR, GOOD DENTISTRY

AUREOMYCIN has proved more effective than penicillin or the sulfonamides in combating many infections. It has the advantages of long retention in body tissues and fluids, broad range of antimicrobial activity, and it is well tolerated.

AUREOMYCIN Capsules are convenient for the dentist, and preferred by the patient to injections. They cost less, too—a saving for both you and your patient.

You can order AUREOMYCIN Capsules from your usual source of supply; your patient can secure them, on your prescription, from any pharmacy.

FREE For your convenience in prescribing AUREOMYCIN Lederle has prepared special prescription pads. Write for yours today!

Capsules: 250, 100 and 50 mg.
Soluble Tablets: 50 mg.
Dental Cones: 5 mg.
Dental Paste: 3%
Dental Ointment: 3%

LEDERLE LABORATORIES DIVISION

AMERICAN Cyanamid COMPANY Pearl River, New York

*TRADE-MARK

CO-RE-GA

A name repeated with confidence wherever denture adhesives are recommended by dentists and used by patients . . . a symbol of highest quality product and strictly ethical service.

Accepted COUNCIL on DENTAL THERAPEUTICS AMERICAN DENTAL ASSOCIATION

CO-RE-GA IS NOT ADVERTISED TO THE PUBLIC

Mail this coupon for your supply of professional samples

Dr. _____
PLEASE PRINT

Address _____

City _____ State _____

Dept. 25-F

CO-RE-GA CHEMICAL CO. • 76 Mill Road, Jersey City 6, N. J.

acrylics processed automatically at precise temperature and timing

HANAU

JUNIOR

CURING UNIT

Fully automatic, with precisely controlled temperatures and timing, the Hanau Junior Curing Unit assures consistent success in processing acrylics.

By merely setting the thermostat to any prescribed temperature (90° to boiling), and the timer for any prescribed period (15 min. to 23 hrs.), the unit functions without attention, shutting itself off upon completion of the selected curing cycle. Thus, your presence is not required, day or night.

Compactly built, the Hanau Junior Curing Unit accommodates two standard size flasks held in a compress, or several smaller flasks. Units with larger capacities are also available.

Complete information may be obtained from your dealer, or by writing to . . .

HANAU ENGINEERING CO., INC.
1233 MAIN STREET • BUFFALO 9, N. Y.

WATCH THOSE WIDE OPEN

S-P-A-C-E-S

By Making More Space Maintainers You Can Build An Exciting New Addition To Your Practice

There are over 31,000,000 children under the age of 12 in America today, and approximately 4,000,000 new babies join our population each year. And this large and expanding population group is expected to increase for years and years.

Child Dental Care for this group is a most essential requirement and the practice of placing space maintainers plays a significant role in this service. Needless to say a small investment in a space maintainer can often help to prevent orthodontic and psychological problems in later years.

Now using Rocky Mountain's inexpensive time saving crowns, bands, space maintainers, and the new Denta-Weld Model 30 electric spot welding and soldering machine, you can fabricate space maintainers in one sitting thus realizing a new source of income while contributing a valuable health service.

Rocky Mountain Band and Space Maintainer Kit only . . . $5.25

Rocky Mountain Denta-Weld model 30 only . . . $42.50

For Space Maintainers, Matrix Bands, Light Spot Welding and Electric Soldering.

You will find Space Maintainer Treatment helps promote satisfaction and respect and serves as a great practice builder, because *The Child of Today is your Patient of Tomorrow.*

For more detailed information on the new Denta-Weld and Rocky Mountain Space Maintainer materials contact your dealer or check the technique literature desired and mail the coupon.

ROCKY MOUNTAIN METAL PRODUCTS CO.

BOX 1887 — DENVER, COLORADO

STEEL-CHROME HIGHEST QUALITY

STEEL-CHROME HIGHEST QUALITY

ADA-601

Please send me

☐ Denta-Weld Booklet

☐ Space Maintainer Booklet

Dr. .....

.....

.....

FOR MODELS . . FOR DIES:

- ***GREATER PRECISION . .***
  ONLY HALF AS MUCH EXPANSION (SETTING DISTORTION) as the most accurate of previous stones.
- ***GREATER STRENGTH . .***
  NEARLY FIFTY PER CENT HIGHER CRUSHING STRENGTH than the strongest of conventional stones.
- ***GREATER SURFACE HARDNESS . .***
  VASTLY MORE RESISTANT TO CHIPPING OR ABRASION; its ultra-smooth, dense surface retains minutest detail.

Duroc ideally fulfills the demand for a precision die material of extreme hardness for use in conjunction with the elastic impression materials in the indirect technic for inlay and bridge work.

Available in 5-, 15-, 35-, 50- and 100-pound containers.

ORDER A CAN FOR TRIAL NOW!

THE RANSOM & RANDOLPH COMPANY
TOLEDO 1, OHIO

6 REASONS why you should buy Ash DENTAL INSTRUMENTS

- Uniformity
- Superior Craftsmanship
- Exactness to Pattern
- Finest Stainless Steel
- Sharp Cutting Edges, Durable Working Surfaces
- New, Long-Lasting "Lustra Finish"

Remember . . .

There's an Ash instrument for every dental need. And remember, too, when you buy instruments, insist on genuine Ash instruments . . . look for the name "ASH ENGLAND" on the handle.

ASH AMALGAM INSTRUMENTS
DOUBLE-END

Claudius Ash, Sons & Co., Inc., U.S.A.
309 Main Street • Niagara Falls, N. Y.

"A powerful and effective antibiotic which can control infections in and about the oral cavity."[1]

As an adjunct in today's dental practice, Terramycin has been recognized as "one of the antibiotics of choice in the treatment and control of dental infections."[2] Because Terramycin has unique physical properties, the development of dosage forms especially suitable for dental use has been possible—it offers the dentist an effective antibiotic that does not require special techniques and that is compatible with other compounds useful in dentistry.[3]

1. Winter, L., Jr., and Van Gaasbeek, B.: New York State Dent. J. 18:119 (March) 1952.
2. Pollock, S. L., and Archer, W. H.: Pennsylvania Dent. J. 20:10 (March) 1953.
3. Kurzrock, A. H.: J. New Jersey Dent. Soc. 24:49 (April) 1953.

Terramycin®

Brand of oxytetracycline

Pfizer

Dental Department
PFIZER LABORATORIES, Brooklyn 6, N.Y.
DIVISION, CHAS. PFIZER & CO., INC.

You would see *conclusive proof* of the remarkable impenetrability of Fleck's Cement. This density and resistance to solubility and disintegration provides a positive enduring barrier against all possible destructive influences . . . *even when used in the thinnest film!*

It is these essential qualities that have made "Fleck's" a standard of excellence for over 45 years.

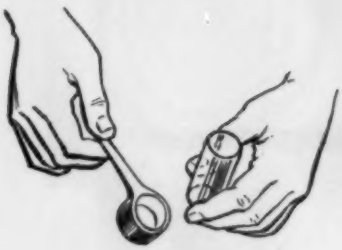
FLECK'S CEMENT

OXY-PHOSPHATE OF ZINC –11 COLORS PLUS BLENDING SHADES
RED COPPER – REF. DENTAL COSMOS. 11/1915. p-1209

Better Materials for Better Dentistry

MIZZY, INC., Clifton Forge, Virginia
New York Office, 175 Fifth Avenue, New York 10

FOR BETTER IMPRESSIONS AT A LOWER PRICE...

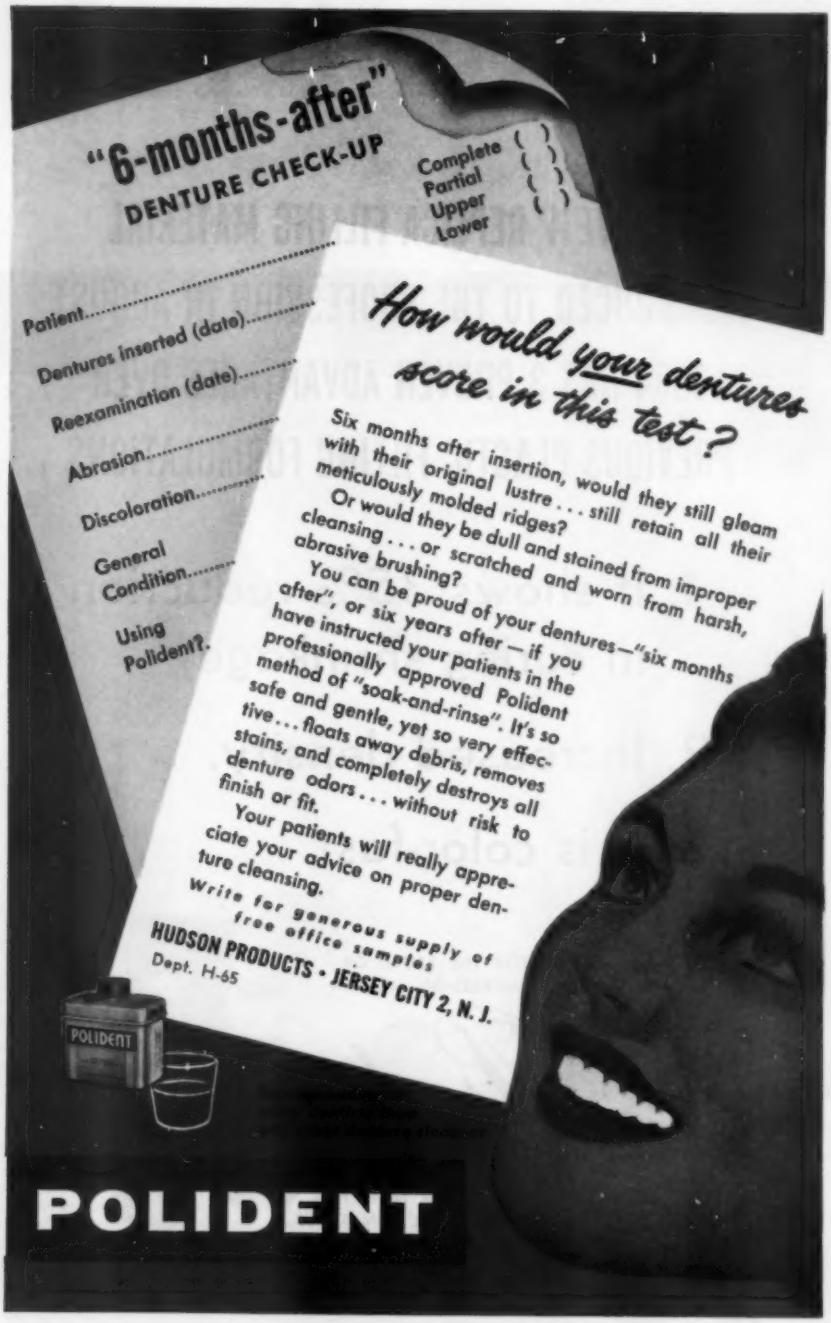


Now . . . Coe Alginate—the NO-FIX impression material is packed in LARGE money-saving vacuum cans. How large, you ask? Actually, each can contains ample material for at least two dozen full, or four dozen partial, impressions! Advantages are: strength with sufficient elasticity to reproduce undercuts, dependable accuracy, and the assurance of hard, smooth casts. Plus the fact that it is NOT necessary to fix the impression after you have taken it.

LARGE CAN $4.00
6 CANS . . . . . each 3.50

COE LABORATORIES, INC.
Chicago 21, Ill.

For those who prefer pre-measured impression material, we recommend Super COE-LOID POWDER in no-waste Full Unit and Half Unit individual foil packages. Its ease of handling, flawless accuracy, and satisfying results are well known. Box of 12 Full Unit Pkgs., $4.00; 12 Half Unit Pkgs., $2.25.


"6-months-after"
DENTURE CHECK-UP
Complete ( )
Partial ( )
Upper ( )
Lower ( )
Patient.....
Dentures inserted (date).....
Reexamination (date).....
Abrasion.....
Discoloration.....
General Condition.....
Using Polident?.
How would your dentures score in this test?
Six months after insertion, would they still gleam with their original lustre . . . still retain all their meticulously molded ridges?
Or would they be dull and stained from improper cleansing . . . or scratched and worn from harsh, abrasive brushing?
You can be proud of your dentures—"six months after", or six years after — if you have instructed your patients in the professionally approved Polident method of "soak-and-rinse". It's so safe and gentle, yet so very effective . . . floats away debris, removes stains, and completely destroys all denture odors . . . without risk to finish or fit.
Your patients will really appreciate your advice on proper denture cleansing.
Write for generous supply of free office samples
HUDSON PRODUCTS • JERSEY CITY 2, N. J.
Dept. H-65
POLIDENT
POLIDENT

THE *NEW* REPLICA FILLING MATERIAL INTRODUCED TO THE PROFESSION IN AUGUST 1954 HAS 3 PROVEN ADVANTAGES OVER PREVIOUS PLASTIC FILLING FORMULATIONS

1. It shows 35% reduction in curing shrinkage.
2. Increased density.
3. It is color-fast.

FOR THE BRUSH OR COMPRESSION METHOD.

Replica

YOUR DEALER NOW HAS IMPROVED REPLICA IN STOCK.

COSMOS DENTAL PRODUCTS, INC. • 653 Eleventh Avenue • New York City

Vinethene®

(VINYL ETHER FOR ANESTHESIA U. S. P., MERCK)

rapid induction—rapid recovery
ideal for dental procedures

MAJOR ADVANTAGES: Smooth, rapid induction with prompt recovery; nausea and vomiting uncommon; versatile and easily administered.

VINETHENE is well-adapted to the extraction needs of the oral surgeon. Its use minimizes emotional trauma in both children and adults. VINETHENE is easily administered via the open-drop technic or may be used to supplement nitrous oxide-oxygen in your gas machine. The anoxia and excitement that may accompany nitrous oxide-oxygen alone is thus often eliminated. VINETHENE is an anesthetic you can use with confidence. It is non-toxic to cranial nerves, has no notable cardiac effects and seldom produces spasm of the masseter muscle.

SUPPLIED: In 3-10 cc. bottles per box and in bottles of 25 cc., 50 cc., and 75 cc., each with adjustable, plastic dropper-caps.

SHARP & DOHME

PHILADELPHIA 1, PA.
DIVISION OF MERCK & CO., INC.

put them in

S. S. WHITE equipment can complement your skill . . . inspire confidence . . . build prestige

Successful practice rests literally in *your* skilled hands . . . capable hands that merit the finest equipment to express their skill fully and profitably. That's the purpose of S. S. White equipment . . . engineered for smooth operating, designed for time-saving, and styled to convey the instant impression of cleanliness, comfort and competence. Your dealer will gladly demonstrate the S. S. White Master Unit D-2 on request.

THE S. S. WHITE DENTAL MFG. CO.

PHILADELPHIA 5, PENNSYLVANIA

in your plans for profitable business

COMFORT

EFFICIENCY

EASE

S. S. White Master Unit D-2 Motor Chair and Operating Stool

Who wants wide interproximal spaces where they serve no purpose ?

Designed specifically as BRIDGE TEETH, Steele's New Hue teeth *minimize* the interproximal space.

And equally as important as their improved anatomy, are their *functional* character markings — which when wet become tiny, light-reflecting *facets,* giving the tooth a true life-like *sparkle.*

Steele's New Hue facings and Trupontics are the *modern* teeth for all restorations of metal.

Steele's INTERCHANGEABLE TEETH

IN NEW HUE SHADES

The Columbus Dental Manufacturing Company • Columbus 6, Ohio

NOW radiography at 90 KVP

Biggest advance in dental x-ray in 30 years

New CDX-70 . . . fixed x-ray output, 10 ma at 70 kvp . . . many of the advantages featured in the CDX-90.

New CDX-90 by General Electric

Unprecedented 90 kvp gives remarkable film quality . . . more uniform penetration of all dental structures. You also get stepless, variable x-ray control — up to 15 ma at 40 to 90 kvp.

New electronic timer offers unrivalled accuracy. Remote exposure control. Automatic resetting, 24 positively-indexed exposure times, 1/20 to 10 seconds.

Far greater safety for you and your patient, thanks to highest inherent filtration — 1.5 mm al. Extra filters provided increase total to 2.5 mm al.

Effortless radiography results from small, compact tube-head . . . 76-in. bracket extension . . . 22-in. vertical tube travel.

See your dealer for all the facts. Or, write X-Ray Department, General Electric Company, Milwaukee 1, Wisconsin. Ask for Pub. JJ63.

Progress Is Our Most Important Product

GENERAL ELECTRIC

perfect full denture impressions every time...

Use 3 in 1 "Regular" or "Thin"—or combine for a consistency to fit EVERY *case and technic.*

D-P 3 in 1 CREAM OFFERS YOU THESE ADDITIONAL ADVANTAGES:

Ideal for pressure or non-pressure technics.

Pleasant tasting, with no burn.

Will not adhere to dry tissue.

Specially compounded to compensate for stone expansion.

Reproduces denture bearing areas *in all dimensions* with micrometric accuracy.

Material adheres to itself—can be added to if necessary.

Can be withdrawn over *any* undercuts.

Will not distort when cast is poured.

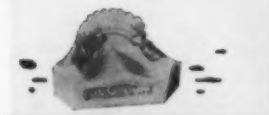
Order both "Regular" and "Thin" from your Dental Dealer TODAY.

dental perfection co.

543 West Arden Ave., Glendale 3, Calif.

Ticonium's ALL NEW Developments...

STRESS-O-GRAPH — New, modern, accurate surveyor with a Micro-Meter gauge which measures undercuts accurately. Magna-Mount table insures accuracy on every case.



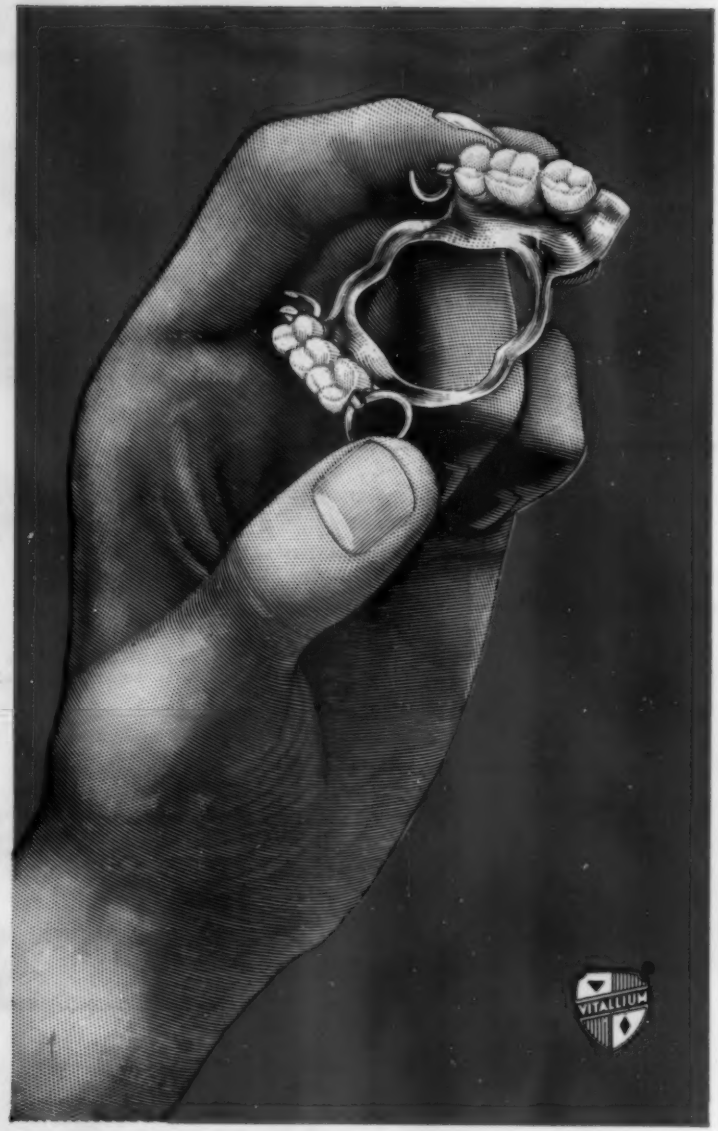
STRESS-CHECKERS — precise, accurate castings made better with a metal shim (Ames) or prefabricated plastic former (Baca) for built-in accuracy on every partial denture.

TRU-RUGAE — for brighter, sparkling cases! Use of a plastic wafer now produces the most minute details of every patient's rugae.

SURGICAL APPLICATIONS — requires a special alloy. Ticonium developed its famed #25 surgical alloy for use in implantation and replantation. Another Ticonium exclusive!

TICONIUM

413 No. Pearl St., Albany 1, N. Y.


VITALLIUM

Crafted by leading laboratories

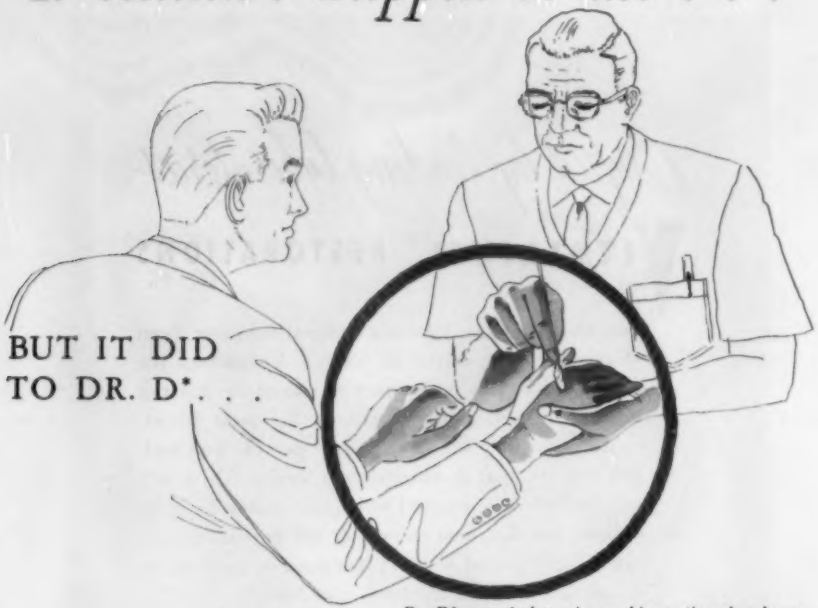
VITALLIUM® RESTORATIONS

For over 20 years Vitallium restorations have been designed and produced in leading laboratories the country over. This is assurance to you of the superior qualities of Vitallium restorations, for these laboratories know they cannot afford to provide you with less than the best in materials and service. The tested and certified alloy, coupled with quality-controlled procedures, enables them to provide the profession with cast full and partial dentures that excel in comfortable fit, efficient function and long, useful life.

AUSTENAL LABORATORIES, INC.
NEW YORK CHICAGO

® By Austenal Laboratories, Inc.

"It couldn't happen to me . . ."



Dr. D* . . . had to give up his practice when he was afflicted with dermatitis of both hands shortly after he purchased ADA insurance coverage. In your case, as in Dr. D's, office time represents your income. Respect it and insure it.

Take a moment, please . . . Think about protecting your income should disabling accident or illness keep you from your practice. ***Be prudent, too*** . . . See beforehand that your continuing income depends upon your presence in your office; that your absence may mean loss of financial security for you and your family. ***Think*** . . . have forethought and apply now for the economical and liberal income protection afforded by your American Dental Association Group Accident and Health Insurance Plan.

You save 35 to 50 per cent of the cost
of similar protection individually purchased.

For complete information regarding benefits, regulations and semi-annual rates, communicate with the Trustee of the Policy, Dr. Paul Zillmann, 29 Walden Avenue, Buffalo 11, New York or with M. A. Gesner, Inc., 150 East Superior Street, Chicago 11, Illinois.

Issued Exclusively by

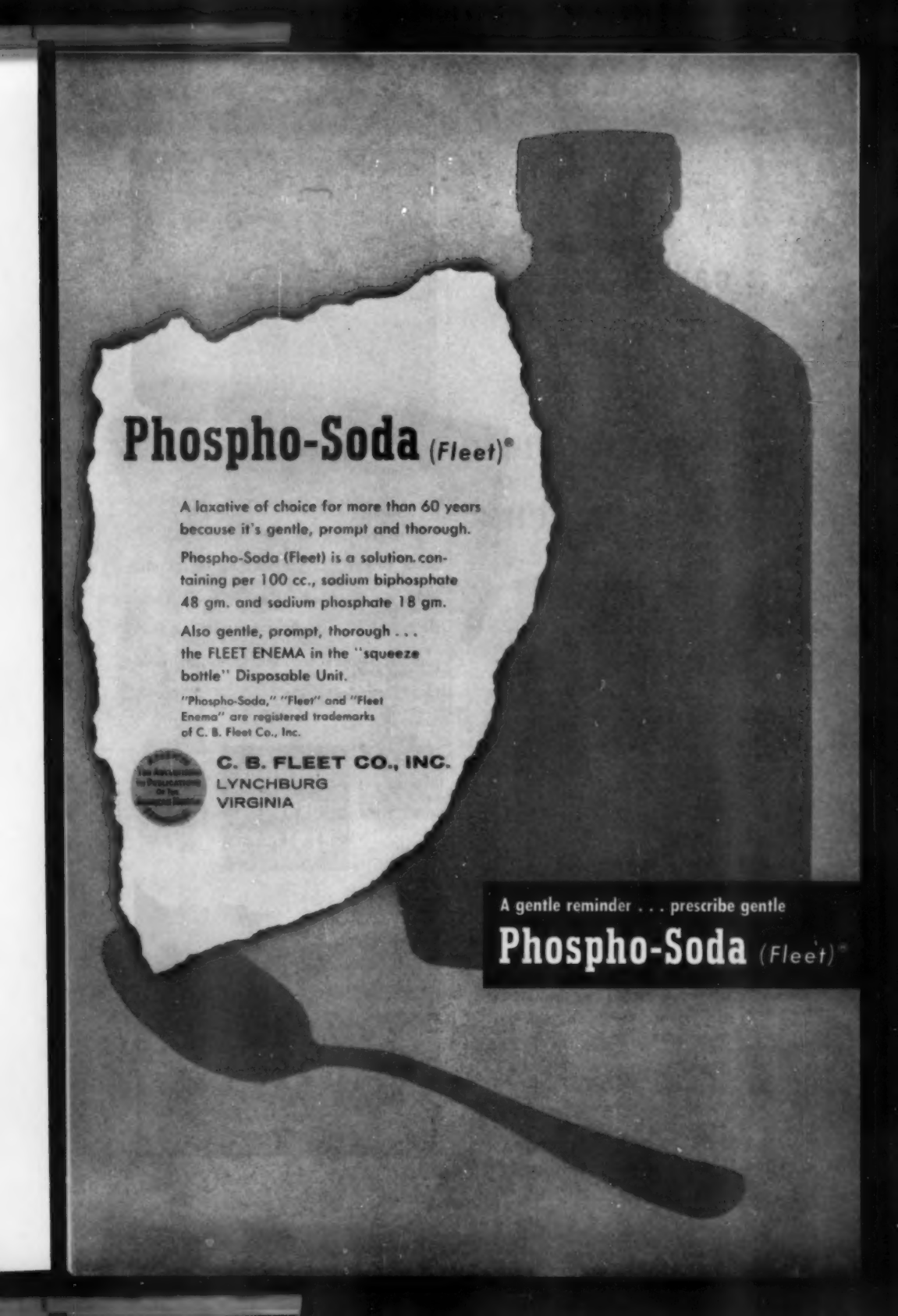
NATIONAL CASUALTY COMPANY of Detroit

Through

M. A. GESNER, INC.

150 East Superior Street **WHitehall 3-1525** **Chicago 11, Ill.**

Since the National Casualty Company's plan of accident and health insurance has been in effect for many years in New York, New Jersey, California, Utah and Nevada, the Association Plan is not available in those states.


Phospho-Soda (Fleet)®
A laxative of choice for more than 60 years because it's gentle, prompt and thorough.
Phospho-Soda (Fleet) is a solution containing per 100 cc., sodium biphosphate 48 gm. and sodium phosphate 18 gm.
Also gentle, prompt, thorough . . . the FLEET ENEMA in the "squeeze bottle" Disposable Unit.
"Phospho-Soda," "Fleet" and "Fleet Enema" are registered trademarks of C. B. Fleet Co., Inc.
C. B. FLEET CO., INC.
LYNCHBURG
VIRGINIA
A gentle reminder . . . prescribe gentle
Phospho-Soda (Fleet)®

for
caries-active
patients

recommend
non-cariogenic

Amurol®

Sugarless
Mints

REFRESHING MINT FLAVOR!
Deliciously sweet, but free from sugar. Available through drug, department and health food stores.

Samples and literature on request.
Please give druggist's name and address.

AMUROL PRODUCTS COMPANY
116 S. Michigan Ave., Chicago 3, Ill.

THE EMBLEMS OF RELIABLE PROTECTION
SINCE 1902

We cordially invite your inquiry for application for membership which affords protection against loss of income from accident and sickness (accidental death, too) as well as benefits for hospital expenses for you and all your eligible dependents.

all premiums come from → PHYSICIANS SURGEONS DENTISTS ← all benefits paid to

PHYSICIANS CASUALTY
AND
HEALTH ASSOCIATIONS
Omaha 2, Nebraska

$4,500,000 ASSETS
$22,500,000 PAID FOR BENEFITS

Take your choice of the 3 alloys

AUTOMATICALLY GEARED

to your operating preference

20th CENTURY REGULAR — *for promptest possible completion of fillings*

Manipulated with a forthright technic. Fillings can be completed in exceptionally short time. There is ample time for each stage of the filling operation, but delays should be avoided.

FINE CUT — *for a smooth, buttery mix with greater latitude*

This fine-grained alloy gives the dentist greater latitude in the filling operation, so that he can be a little more deliberate at each stage of the procedure.

NON-ZINC — *for excellent results where a dry field is hard to maintain*

Produces lustrous amalgam fillings even without zinc. Performs with uniform excellence in gingival cavities where seepage persists, as in children's dentistry.

Another advantage:

CAULK ALLOYS

Release More Mercury

—more quickly—to develop greater strength sooner.

Raising the Bite must be done Right!

Raised-bite restorations are now recognized as an outstanding example of modern restorative dentistry.

To be beneficial, bite raising must be harmonized with the physiological requirements and sound dental engineering. In short it must be "good dentistry". The *esthetic value* of the raised bite appliance is immediately apparent. Hidden from view but of far greater importance is the *elimination of traumatic occlusions.*

Dresch Laboratories developed and introduced raised-bite removable appliances more than 25 years ago. Hundreds of these appliances have been made for clients since that time. This wide experience is your assurance of expert cooperation and good results. When desired we will assist in the design of the appliance upon the receipt of study casts. The Dresch Laboratories Company, 1009 Jackson St., Toledo 1, O.

DRESCH LABORATORIES

Quality Service since 1915

ANOTHER MEASURE OF DRESCH DEPENDABILITY

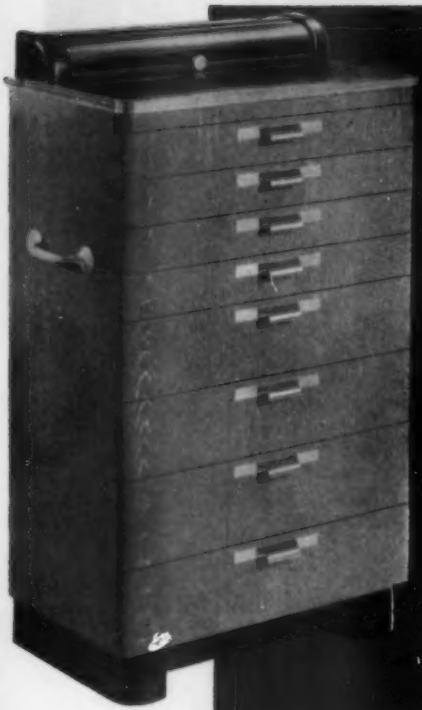
ONLY SHELLEY

gives you a genuine

WOOD GRAIN FINISH

to perfectly match the color of

YOUR UNIT AND CHAIR



It's Stain proof too!

AT LEADING DENTAL EQUIPMENT DEALERS FROM COAST TO COAST

SEND FOR 5 COLOR CATALOG

Shelley

"WORLD'S FINEST DENTAL CABINETS"

Shelley Dental Mfg. Co. Dept. A
305 Glendale Blvd., Los Angeles 26, Calif.

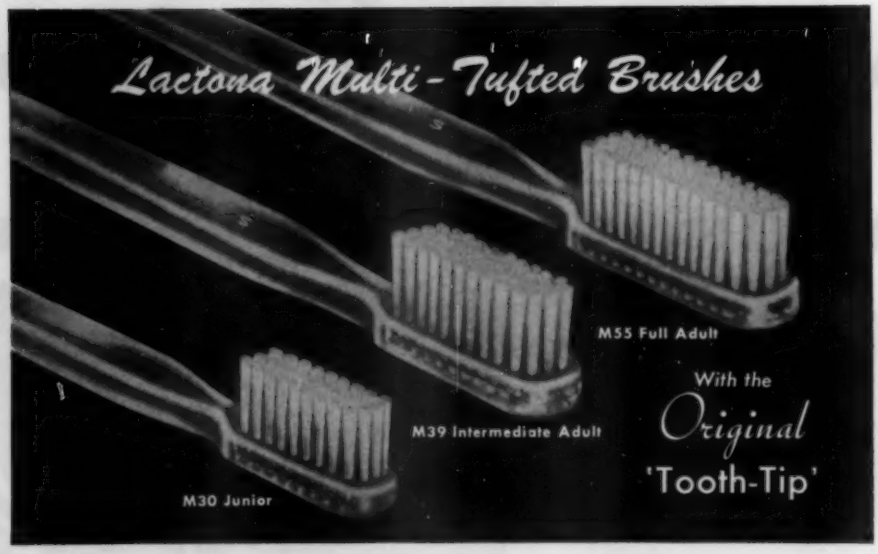
Send complete information on Shelley Mobile Dental Cabinets.

Name_____

Address_____

City_____ Zone____ State_____

My dealer is_____



MULTI-TUFTED Brushes in THREE Brush Sizes

A choice of both Natural Bristle and Tynex (nylon) Textures. The high precision, level trim makes the brush safe and comfortable to use.

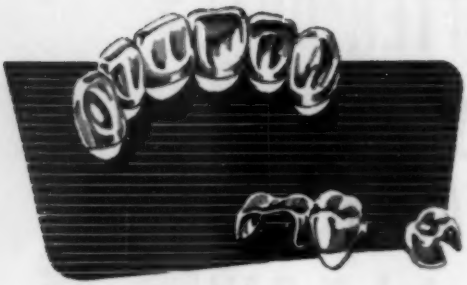
A Lactona Multi-Tufted brush is carefully and properly designed; with every edge and surface of the handle carefully rounded, there are no blunt corners, no excess width or bulk to interfere with its effective use.

A complete professional price Schedule showing all LACTONA brush styles and textures will be mailed upon request.

PLEASE WRITE TO:

LACTONA INCORPORATED

SAINT PAUL 1, MINNESOTA



Dentistry of distinction

• Modern bridgework symbolizes the supreme craftsmanship of the dental artisan and identifies the masterful touch of perfect preparation.

Modern acrylics and perfected veneer technics assure faithful matching of natural teeth. When bridgework is properly designed GOLD assures preservation of natural teeth.

Because you are the guardian of your patient's oral health, you will point out that the use of GOLD is not a luxury but a necessity — that the permanence and pleasing appearance of GOLD for *any* type of restoration make its cost comparatively lower.

Your patient, and yourself, cannot afford anything less.

"GOLD makes a GOOD restoration BETTER"

dental gold institute inc.

5561 MAIN STREET • BUFFALO 21, NEW YORK

ONLY a RITTER DUAL-X offers you these 15 ADVANTAGES of a modern dental X-RAY

1. Exclusive—choose fixed or variable techniques. The Dual-X is two machines in one.
2. Exclusive—tube head design combines advantages of oil immersion, air cooling and solid insulation of high dielectric strength.
3. Exclusive—change direction of the x-ray beam without moving entire tube head.
4. Exclusive—central position of target allows more accurate and easier positioning of the x-ray beam.
5. Exclusive—kilovolt and milliampere controls disengage when not in use, assuring constant results.
6. Exclusive—for added safety, directional kilovolt and milliampere meters assure good visibility from any part of the room.
7. Unexcelled in patient protection.
8. Wide selection of all exposure factors for every diagnostic requirement.
9. Availability of any kilovoltage required for proper penetration of all densities encountered.
10. Trouble-free precision timer of proven accuracy with speeds suited for even the fastest films.
11. Complete control over time selection for each exposure.
12. Simplicity of operation . . . your assistant can easily become your qualified technician.
13. Ample range of tube arm for any dental office requirements.
14. Tube head effortlessly and smoothly positioned by your assistant.
15. Pre-reading kilovolt meter, load-compensated, assures greater accuracy of penetration control.

Ask your Ritter dealer for more details.

NOW YOU CAN Own a Ritter DUAL-X for only $990.00* or as little as 88 cents per office day on the Ritter Professional Equipment Plan. You can no longer afford to be without a Ritter DUAL-X in every operatory.

Ritter Company Inc.

106 RITTER PARK • ROCHESTER 3, NEW YORK *Western zone, slightly higher.

ONLY GOD CAN MAKE A TREE

It is no simple matter for a research chemist to simulate the appearance of natural gums, however, countless experiments have been made to produce plastics which accomplish nature's perfection.

For example, a study of natural gums reveals that arteries and veins lie under the tissue. To reproduce nature, fibers both blue and red, in proper consistency, are laminated in Luxene 44 denture material so as to produce depth of color. Oral Pathologists say this effect truly duplicates nature's aura.

Luxene 44

Luxene 44 denture material was developed by Bakelite Corporation in collaboration with Carbide and Carbon Chemicals Corporation and Luxene, Inc.

Luxene 44 is not an acrylic resin. It is a vinyl co-polymer mixture plasticized with methyl methacrylate monomer and it possesses a combination of essential properties that have raised the standard of denture material values near the goal of perfection. It has been "built" by the world's foremost resin chemists specifically for dentures and it has no other commercial value.

However, it is one thing to produce a material which contains the essential properties of an ideal denture material but it is quite another thing to see that dentures made of this material are processed accurately and properly so that the valuable properties so painstakingly "built" into the product are not thrown away by careless or incompetent technicians.

To safeguard against this possibility, a precision technic has been developed which is known as the "Pressure Cast" process, and details of this process are covered in the following pages. Selected laboratories, which are competent and reliable, are equipped and trained to use the "Pressure Cast" process and they are capable of producing restorations in Luxene 44 to a standard of perfection, the highest anywhere known.

When Luxene-vinyl teeth are selected for use with Luxene 44 denture material, an even more serviceable and practical denture results because Luxene teeth do not crack or craze. The teeth are exceedingly tough and very rarely break, even if the denture is dropped on a tile floor. Luxene teeth also have superior wear resistance, extensive clinical tests over a period of several years has established this fact. The illustration used here is known as the All Luxene C-Tone denture. The C-Tone effect is created by laminating thin sheets of Luxene 44 with proper concentration of blue and red fibres. Oral pathologists say this effect simulates nature.

PUBLISHED ON BEHALF OF LUXENE SELECTED LABORATORIES

EACH LUXENE

LABORATORY ACCOMPLISHES

THE DOCTOR'S GOAL BY

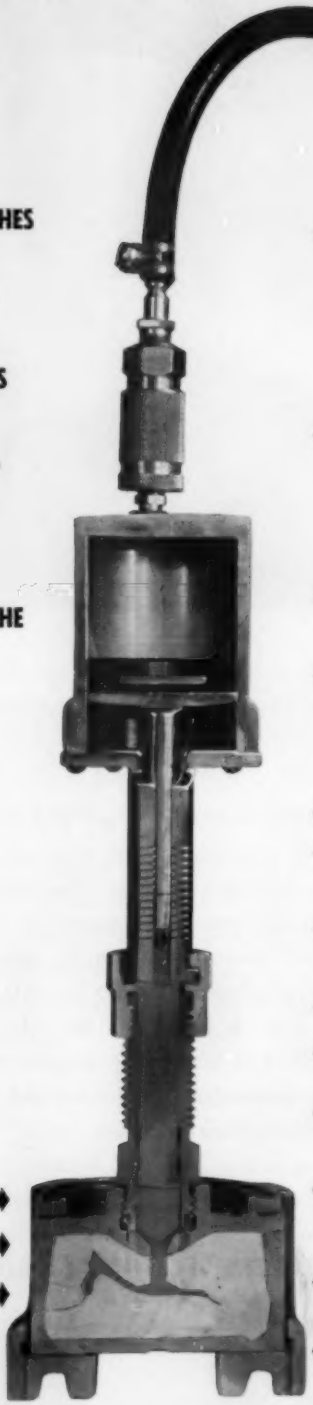
THE USE OF THE FAMOUS

PRESSURE CAST PROCESS.

THIS CASTING PROCESS

VIRTUALLY ELIMINATES THE

RAISED BITE ERROR.



Hose to compressed air supply.

Air gun coupler permits an easy connection to air supply.

Air gun cylinder.

Air gun cup.

Air gun piston.

Air gun guide indicates amount inject

Hole in piston enables operator to rema the piston by slipping metal rod throu the hole and pulling it up. This is nec sary for recharging.

Air gun adapter.

Piston.

Nozzle threaded to screw into air g adapter.

Sprue button.

In the center of the flask is a cross-sect of the moulded denture having no

Bottom ring of the "cage" which, wh tightened in cage closer, closes the fl perfectly.

Lid and bottom surface perfectly flat so as to close uniformly.

Side of cage.

Flask splits here. Notice how perfectly closed — metal to metal contact.

ARTHRITIC DENTAL PATIENTS NEED SPECIAL ATTENTION

Dental patients who have arthritis merit this attention because arthritics who take aspirin are actually 3 to 9 times more susceptible to stomach upsets than the general population.

Recent reports,[1,2] have indicated that 27% to 42% of arthritics suffer nausea, dyspepsia or anorexia when they take aspirin. Yet 70% of those with proved intolerance to aspirin experienced no unpleasant after-effects with BUFFERIN, even in heavy doses.

BUFFERIN, therefore, is the analgesic of choice. It is far better tolerated than aspirin. It is faster acting—the salicylate is absorbed *twice* as fast as aspirin.

All of your patients will appreciate the routine use of BUFFERIN *before* operative procedures are undertaken as well as for post-operative comfort.

BUFFERIN® contains acetylsalicylic acid (5 gr. per tablet), for prompt analgesia, plus magnesium carbonate and aluminum glycinate. *Available* in bottles of 12, 36, 60 and 100 tablets.

References: 1. Report in press. 2. Brit. M. J. 1:1223 (May 29) 1954.

BUFFERIN® Acts Twice as Fast as Aspirin Does Not Upset the Stomach

BRISTOL-MYERS PRODUCTS DIVISION

BRISTOL-MYERS CO., 19 W. 50 St., New York 20, N. Y.

B *stands for Beauty*

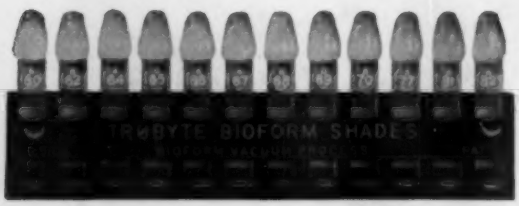
beau-ty (bū'tĭ), *n.* [*pl.* -ties (-tĭz)], [<*M.E. beaute* < O.F. *bealte* < Lat. *bellus,* pretty], 1, that combination of qualities which is pleasing to the eye or ear, or is satisfying to the æsthetic sense in the field of morals; 2, a particular grace or charm; 3, a beautiful person or thing; especially, a lovely woman.

B *also stands for* Bioform®

. . . . . and what could be more beautiful, more pleasing to the eye of your patient and more satisfying to your own aesthetic sense! Trubyte Bioform Shades are the most natural appearing shades in artificial tooth colors ever made available. They look vital and alive under all lighting conditions and compare most favorably with the finest natural teeth at the peak of health and vitality.

When You Specify Tooth Shades

Specify B *for* Bioform®



TRUBYTE Bioform® | The First Vacuum Fired Porcelain Teeth

Another Outstanding Product of

THE DENTISTS' SUPPLY COMPANY OF NEW YORK

York, Pennsylvania